HITACHI
Inspire the Next

VARIABLE FREQUENCY DRIVE

SJ700 Series

Powerful Inverter

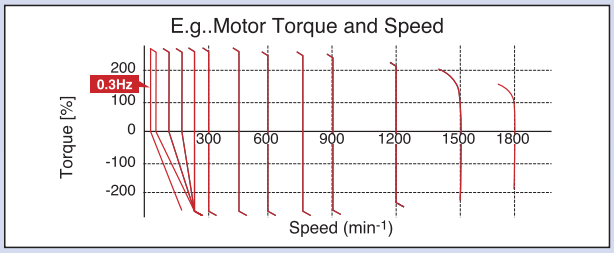
Hitachi Industrial Equipment Systems Co.,Ltd.

High performance with Many useful

High starting Torque, Powerful Drive and easy setting

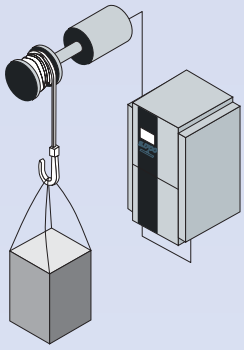
High starting Torque 200% at 0.3Hz

Improvement of [Sensorless Vector Control], [Auto Tuning] realize High starting torque 200% and more at 0.3Hz.
Easy adjusting of Motor constant
The best for applications, which need high torque, such as cranes, extruders and lifts.



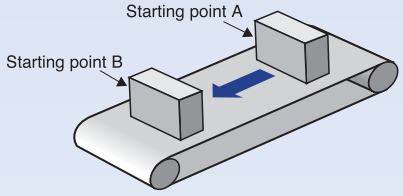
Hitachi original 0Hz Domain sensorless vector control

Keep 150% * torque at 0Hz speed signal
Crane applications require high torque at starting
*150%torque in case 1 frame big inverter capacity of motor



Position Control Function

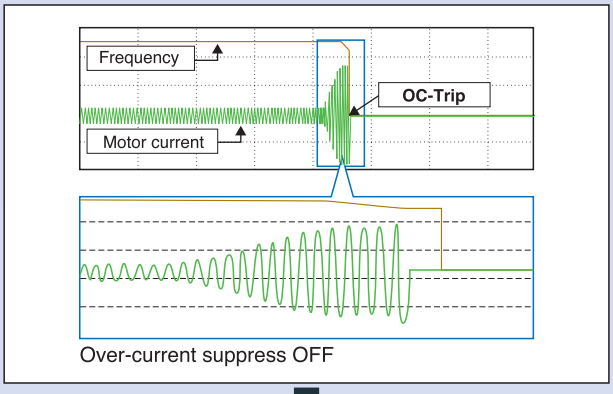
With combination of the SJ700 and a motor with an encoder, position control is possible by adding SJ-FB feedback option card to the inverter.
When position control is necessary with conveyor application, the system can be built with lower cost.
According to four parameters (position command, speed command, acceleration time and deceleration time), the SJ700 will move an object from original position A to target position B. After the movement, the inverter keeps servo lock status.

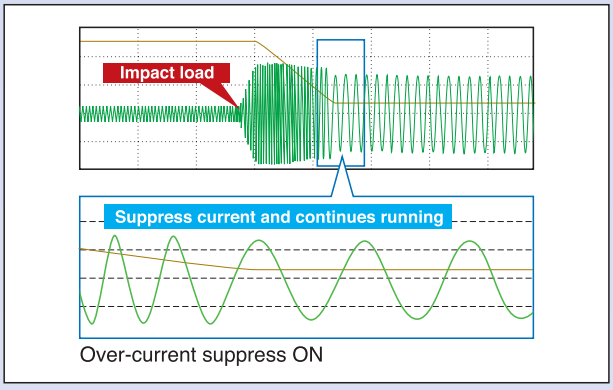


Trip avoidance function

Over current & voltage suppress function

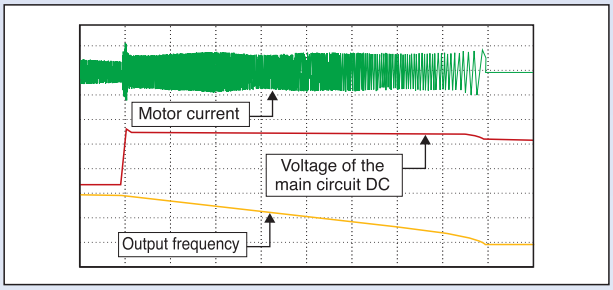
Higher internal calculation speed* improve current control performance Over-current suppress and Over-voltage suppress function avoid inverter trip during acceleration and deceleration period.





DC Bus AVR Function During Deceleration

The SJ700 controls deceleration time for DC bus voltage not to exceed over-voltage trip level. This realizes trip-less operation during deceleration.



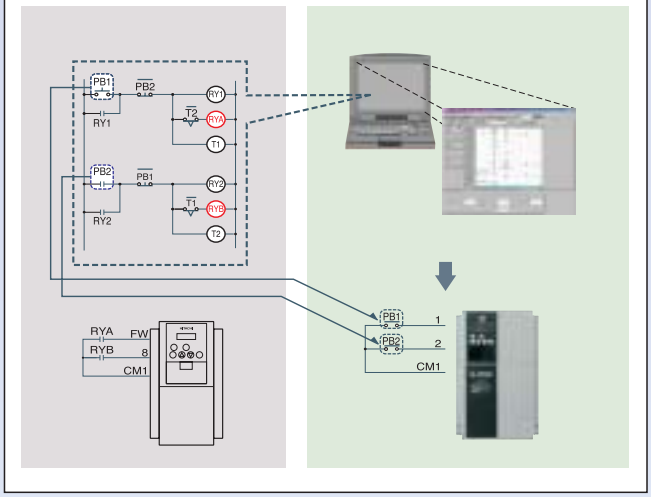
Functions and User Friendly.

Programming [EzSQ: Easy Sequence] function

Inverter control by Built-in Programming function

Simple sequence operation is realized by downloading to an inverter the program created by programming soft EzSQ.
It is also possible to automatic speed control according to a load situation like a swift lift function for crane or a conveyor, and to operate.
Since an external circuit can be simplified, a control board is made small and a cost cut can be aimed at.
Password function is added to prevent program information leaks. This is also useful for unexpected data rewriting or deletion by operation mistake.

[The example of a use] Example for Rely sequence



Item			Description
Language Spec	Language type		BASIC Like
	Supported Device		Windows(DOS/V)OS:Windows98SE,Windows2000,WindowsXP)
	Memory area		1,024 steps or 6k byte (Smaller of these)Program is stored in internal of inverter.
	Programming environment		Editor(Windows),Display(Windows)
			Grammar check(Windows)
			Program download/upload, All clear
	Executable format		Interpreter 2.0ms/command (Sub routine supported. 8 nested)
I/O function	External input	External digital contact input	Contact signal/Open collector signal input (Internal DC24V power supply available)
			Program RUN command: FW terminal is reserved
			General-purpose input: Maximum of 8 point(X(00)-X(07))
		External analog input	XA(0) : 0-10V (O terminal)
			XA(1) : 4-20mA (OI terminal)
			XA(2) : 0-10V (O2 terminal)
	External output	General-purpose output terminal	Maximum of 8 point(Y(00)-Y(05))
		External analog output	YA(0) : Setup for FM terminal is possible.
			YA(1) : Setup for AM terminal is possible.
			YA(2) : Setup for AMI terminal is possible.
Reserved word	Command		Programmable flow control <Loop,Unconditional jump, conditional jump, Time control, Sub routine, Others>
			Operation command <+,-,,*, /, substitution, mod, abs>
			I/O control(Bit input, Word input, Bit output, Word output)
			Timer control <on delay, off delay>
			Inverter parameter setting
	Variable	User	U(00)-U(31)/32 point
		Timer	UL(00)-UL(03)/4 point
		Set frequency	SET-Freq
		Acceleration time	ACCEL
		Deceleration time	DECEL
		Monitor	Output frequency, Output current, Rotative direction, PID feedback, Converted frequency, Output torque, Output voltage, Power, Cumulative RUN time, Cumulative power-on time, trip
		General-purpose input contact	X(00)-X(07)/8 point
		General-purpose output contact	Y(00)-Y(05)/6 point(1 point is relay output)
		Internal user	UB(00)-UB(07)/8 point
		Internal timer contact	TD(0)-TD(7)/8 point
		Inverter input and output	In a remote operator display code.

* Windows® is a registered trademark of Microsoft Corporation.U.S.A and other countries.

EMC Filter & Brake circuit integrated as Standard

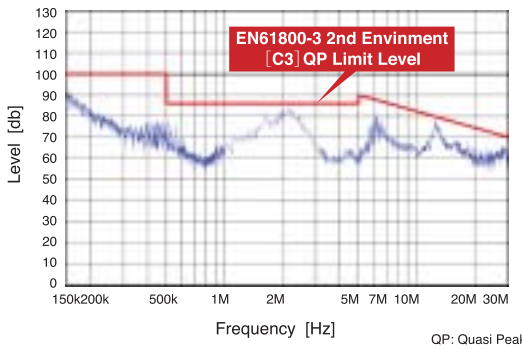
Built-in EMC Filter up to 55kw

Cost and space reduction compared with external EMC Filter.
Reduces electromagnetic noise.
EN61800-3 2nd-Environment

Brake circuit up to 22kW

Cost and Space reduction compared with external Braking Controller.

Example (110HFEF2)



QP: Quasi Peak

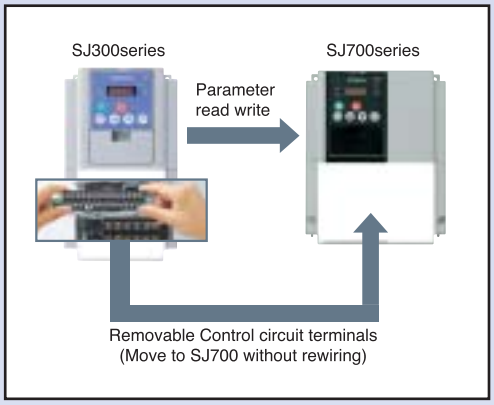
Ease of Maintenance

Easy-removable construction for maintenance

Field replacement of cooling fan(s) and DC bus capacitor can be accomplished in a fraction of the time.
Using Logic terminal move to SJ700 without wiring change.
Read SJ300 Parameter by SRW remote operator and write them in to SJ700

Easy-removable
Cooling Fan

Easy-removable
Dc bus Capacitor
(more than 15kW)



Long life time components & Life time warning function

Long life time components

Design lifetime 10 Years or more Dc bus capacitor & Cooling Fan.
Cooling Fan ON/OFF control lead more longer life time.

*Ambient temperature: Average 40 deg C (no corrosive gasses oil mist or dust)
Design lifetime is calculation and out of guaranty.

Life time warning function

Avoid trouble before the malfunction by lifetime Warning signal.
The monitor of the temperature rise of a Dc bus capacitor, cooling fan degradation degree, a cooling fin, and a motor can be carried out.
Replace the components before the malfunction.

Easy Operation

User selection of Parameter functions

Data comparison function

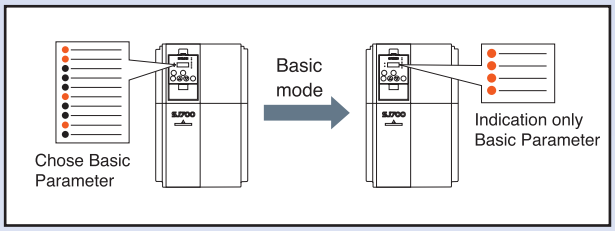
Allows display of only parameters changed from default.

User selected function

Display of up to 12 User Defined Parameters U001 to U012.

Basic mode (default)

Basic display mode for commonly used parameters.



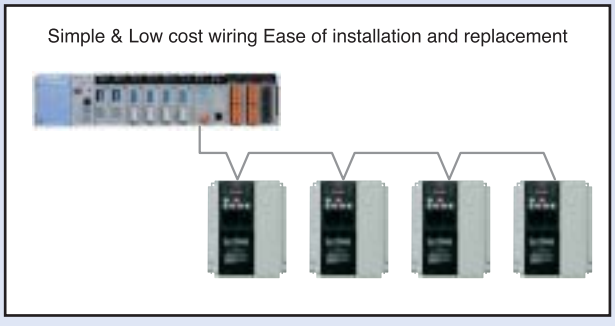
Other Functions

-The direct input of function code selection is also attained other than a scroll type allowing for a shorter set up time.
-Continuously pushing the function key for 3 seconds, causes the display to jump to output frequency monitor (d001) mode from every key.

Network compatibility

The port corresponding to RS-485 Modbus-RTU is equipped as standard.
SJ700 can communicate with DeviceNet PROFIBUS-DP LonWorks with communication options.

-DeviceNet is a trade mark of Open DeviceNet Vender Association, Inc.
-LonWorks is a registered trade mark of Echelon Corporation
-PROFIBUS-DP is a registered trade mark of PROFIBUS Nutzer Organization



Global standards

Conformity to global standards

CE, UL, c-UL, C-Tick approvals.

Logic input & output Terminal apply sink & source logic

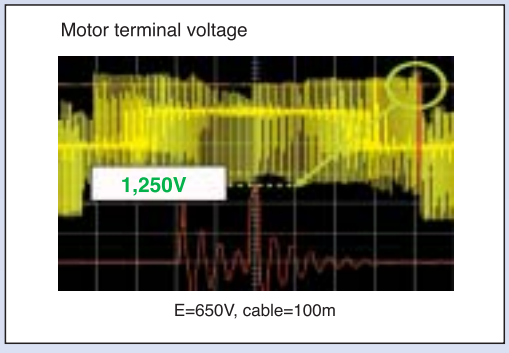
Wide Input power voltage range

Input voltage 240V for 200V class and 480V for 400V class as standard.

Environmental Friendliness

Micro Surge Voltage suppress function (Patent registered in Japan,USA & Korea)

Hitachi original PWM control suppressing Motor terminal Voltage less than 2 times of INV DC voltage E.
Lower than Hitachi motor Max. insulation voltage (1,250V)
(during regenerating operation increase the DC bus voltage may over motor max. insulation voltage)



EU RoHS compliant

EU RoHS compliant by restricting to use hazardous substances.
(except solder in power module)

Improvement of environment

Varnish coating of internal PC board & plating of main circuit copper bus bar as standard.

Versatile Functions

Instantaneous Power Failure Disregard Function

The SJ700 ignores instantaneous power failure when power fluctuation happens frequently as long as DC bus voltage keeps higher than under-voltage level.

Emergency stop

Shut down INV output by electric circuit without CPU realize high quality emergency stop.

Intelligent input terminal and output terminal delay time function

Simplification of an external circuit is possible.

Active frequency matching function

Restart by motor frequency search restart function without motor remaining voltage.

Controlled deceleration and stop on power loss

Analog Input Disconnection Detecting Function

The SJ700 outputs disconnection signal when frequency command through analog input is lost.

Acceleration/Deceleration curve functions

The pattern (5 kinds) which can be chosen according to a usage is carried.

Analog Command Holding Function (AHD)

Output frequency can be changed with UP/DOWN Function with analog signal as reference value. The frequency at power shutdown can be saved, too.

Pulse train input function

Pulse train input for Frequency reference or PID feed back signal with SJ-FB(speed feed back card:option).

Integrated Input Electric Power monitor

Input electric power(kW) and Integrated input electric power for monitoring energy saving.

Automatic Carrier Frequency Adjustment Function

The SJ700 detects motor current and automatically reduces carrier frequency according to the current.

The resolution of a monitor (voltage, current) output is improved to 10 bits.

Powerful Inverter SJ700

EC97J1095

STANDARD SPECIFICATIONS

● 3-phase 200V class

Model SJ700-		US Version	055LFUF2	075LFUF2	110LFUF2	150LFUF2	185LFUF2	220LFUF2	300LFUF2	370LFUF2	450LFUF2	550LFUF2
		JP Version	055LFF2	075LFF2	110LFF2	150LFF2	185LFF2	220LFF2	300LFF2	370LFF2	450LFF2	550LFF2
Enclosure (*1)			IP20									
Applicable motor (4-pole, kW(HP)) (*2)			5.5(7.5)	7.5(10)	11(15)	15(20)	18.5(25)	22(30)	30(40)	37(50)	45(60)	55(75)
Output Ratings	Rated capacity (KVA)	200V	8.3	11.0	15.9	22.1	26.3	32.9	41.9	50.2	63.0	76.2
		240V	9.9	13.3	19.1	26.6	31.5	39.4	50.2	60.2	75.6	91.4
	Rated output current (A)		24	32	46	64	76	95	121	145	182	220
	Overload capacity(output current)		150%,60sec., 200%,3sec.									
	Rated output voltage (*3)		3-phase (3-wire) 200 to 240V (corresponding to input voltage)									
Input Rating	Rated input voltage (V)		3-phase 200 to 240V+10%, -15%, 50/60Hz±5%									
Braking	Dynamic braking (Short-time) (*4)		Built-in BRD circuit (optional resistor)						External dynamic braking unit (option)			
	Minimum value of resistor (Ω)		16	10	10	7.5	7.5	5	–			
Vibration (*5)			5.9m/s²(0.6G), 10-55Hz						2.9m/s²(0.3G), 10-55Hz			
Integrated EMC filter			Built-in									
Zero-phase Reactor			Built-in									
Weight (lbs.)			6(13.2)	6(13.2)	6(13.2)	14(30.8)	14(30.8)	14(30.8)	22(48.4)	30(66)	30(66)	43(94.6)

● 3-phase 400V class

Model SJ700-		European Version	055HFEF2	075HFEF2	110HFEF2	150HFEF2	185HFEF2	220HFEF2	300HFEF2	370HFEF2	450HFEF2	550HFE2	1850HFE2	3150HFE2	4000HFE2
		US Version	055HFUF2	075HFUF2	110HFUF2	150HFUF2	185HFUF2	220HFUF2	300HFUF2	370HFUF2	450HFUF2	550HFUF2	1850HFU2	3150HFU2	4000HFU2
		JP Version	055HFF2	075HFF2	110HFF2	150HFF2	185HFF2	220HFF2	300HFF2	370HFF2	450HFF2	550HFF2	1850HF2	3150HF2	4000HF2
Enclosure (*1)			IP20												
Applicable motor (4-pole, kW(HP)) (*2)			5.5(7.5)	7.5(10)	11(15)	15(20)	18.5(25)	22(30)	30(40)	37(50)	45(60)	55(75)	185(250)	315(400)	400(550)
Output Ratings	Rated capacity (KVA)	400V	9.7	13.1	17.3	22.1	26.3	33.2	40.1	51.9	63.0	77.6	256	416	554
		480V	11.6	15.8	20.7	26.6	31.5	39.9	48.2	62.3	75.6	93.1	308	499	665
	Rated output current (A)		14	19	25	32	38	48	58	75	91	112	370	600	800
	Overload capacity(output current)		150%,60sec., 200%,3sec.										150%,60sec., 180%,0.5sec.		
	Rated output voltage (*3)		3-phase (3-wire) 380 to 480V (corresponding to input voltage)												
Input Rating	Rated input voltage (V)		3-phase 380 to 480V +10%, -15%, 50/60Hz±5%												
Braking	Dynamic braking (Short-time) (*4)		Built-in BRD circuit (optional resistor)						External dynamic braking unit (option)						
	Minimum value of resistor (Ω)		70	35	35	24	24	20	–						
Vibration (*5)			5.9m/s²(0.6G), 10-55Hz						2.9m/s²(0.3G), 10-55Hz				1.96m/s²(0.2G), 10-55Hz		
Integrated EMC filter			Built-in										–		
Zero-phase Reactor			Built-in										–		
Weight (lbs.)			6(13.2)	6(13.2)	6(13.2)	14(30.8)	14(30.8)	14(30.8)	22(48.4)	30(66)	30(66)	30(66)	140(308)	210(462)	360(792)

Model Name Indication

SJ700-055 H F E F 2

- Series Name
- Applicable Motor Capacity
  004: 0.4kW(1/2HP)
  |
  4000: 400kW(500HP)
- Power Source
  L : 3-phase 200V class
  H : 3-phase 400V class
- F : With keypad
- U : US version
  E : European version
  Note:Japanese version
- F : Integrated EMC filter
- Version

Model Configuration

● Available ○ Plan model

Applicable Motor kW (HP)	3-phase 200V		3-phase 400V		
	LFUF2	LFF2	HFEF2	HFUF2	HFF2
0.4(1/2)	○	○			
0.75(1)	○	○	○	○	○
1.5(2)	○	○	○	○	○
2.2(3)	○	○	○	○	○
3.7(5)	○	○			○
4.0(5)			○	○	
5.5(7.5)	●	●	●	●	●
7.5(7.5)	●	●	●	●	●
11(15)	●	●	●	●	●
15(20)	●	●	●	●	●
18.5(25)	●	●	●	●	●
22(30)	●	●	●	●	●

Applicable Motor kW (HP)	3-phase 200V		3-phase 400V		
	LFUF2	LFF2	HFEF2	HFUF2	HFF2
30(40)	●	●	●	●	●
37(50)	●	●	●	●	●
46(60)	●	●	●	●	●
55(75)	●	●	○	○	●
75(100)	○	○	○	○	○
90(125)	○	○	○	○	○
110(150)			○	○	○
132(175)			○	○	○
185(250)			●	●	●
315(400)			●	●	●
400(550)			●	●	●

SPECIFICATIONS

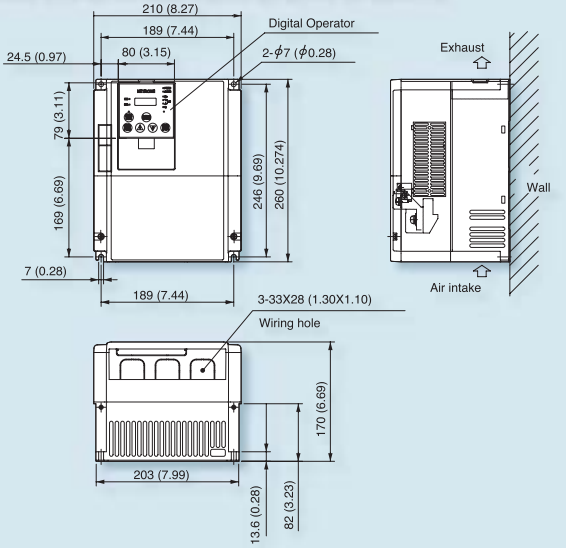
General Specifications

Items			General Specifications
Control	Control method		Line to line sine wave pulse-width modulation (PWM) control
	Output frequency range (*6)		0.1-400.0Hz(185kW and over:0.1-120Hz)
	Frequency accuracy		Digital: ±0.01% of the maximum frequency, Analog: ±0.2%(25±10˚C)
	Frequency resolution		Digital setting: 0.01Hz, Analog setting: (Maximum frequency)/4,000 (O terminal: 12bit 0-10V, O2 terminal: 12bit -10-+10V)
	V/f characteristics		V/f optionally variable (30-400Hz of base frequency), V/f control (constant torque, reduced torque), Sensorless vector control
	Speed fluctuation		±0.5% (sensorless vector control)
	Acceleration/deceleration time		0.01-3,600sec. (Linear/curve, accel./decel. selection), Two-stage accel./decel.
	Starting Torque		200% at 0.3Hz (Sensorless vector control), 150% at around 0Hz (Sensorless vector control, 0Hz domain with motor one frame size down)
	Carrier frequency range		0.5-15.0kHz(185kW and over:0.5-3.0kHz)
	DC braking		Performs at start: under set frequency at deceleration, via an external input (braking force, time, and operating frequency).
Input signal	Frequency setting	Operator	Up and Down keys
		External signal	DC 0-10V, -10-+10V (input impedance 10kΩ), 4-20mA (input impedance 100Ω)
		External port	Setting via RS485 communication
	Forward /reverse Start /stop	Operator	Start/stop commands (forward/reverse switching by parameter setting)
		External signal	Forward-operation start/stop commands (reverse-operation start/stop possible when relevant commands are assigned to intelligent input terminals)3-wire input possible (when relevant commands are assigned to control circuit terminals)
		External port	Setting via RS485 communication
	Intelligent input terminals	Terminals	8 terminals, NO/NC switchable, sink logic/source logic switchable
		Functions	Reverse operation (RV), Multi-speed 1 setting (CF1), Multi-speed 2 setting (CF2), Multi-speed 3 setting (CF3), Multi-speed 4 setting (CF4), Jogging (JG), external DC braking (DB), 2nd motor control (SET), 2-stage acceleration/deceleration (2CH), free-run stop (FRS), external trip (EXT), unattended start protection (USP), commercial power supply switching (CS), software lock (SFT), analog input switching (AT), 3rd motor control (SET3), reset (RS), starting by 3-wire input (STA), stopping by 3-wire input (STP), forward/reverse switching by 3-wire input (F/R), PID disable (PID), PID integration reset (PIDC), control gain switching (CAS), acceleration by remote control (UP), deceleration by remote control (DWN), data clearance by remote control (UDC), forcible operation (OPE), Multi-speed bit 1 (SF1), Multi-speed bit 2 (SF2), Multi-speed bit 3 (SF3), Multi-speed bit 4 (SF4), Multi-speed bit 5 (SF5), Multi-speed bit 6 (SF6), Multi-speed bit 7 (SF7), overload restriction selection (OLR), torque limit selection (enabling/disabling) (TL), torque limit 1 (TRQ1), torque limit 2 (TRQ2), P/PI switching (PPI), braking confirmation (BOK), orientation (ORT), LAD cancellation (LAC), clearance of position deviation (PCLR), permission of 90˚shift phase (STAT), trigger for frequency addition (A145) (ADD), forcible-terminal operation (F-TM), permission of torque command input (ATR), cumulative power clearance (KHC), servo-on (SON), pre-excitation (FOC), general-purpose input 1 (MI1), general-purpose input 2 (MI2), general-purpose input 3 (MI3), general-purpose input 4 (MI4), general-purpose input 5 (MI5), general-purpose input 6 (MI6), general-purpose input 7 (MI7), general-purpose input 8 (MI8), analog command holding (AHD), no assignment (no)
	Thermistor input		1 terminal (PTC characteristics)
Output signal	Intelligent output terminals	Terminals	5 open-collector output terminals, NO/NC switchable, sink logic/source logic switchable 1 relay (1c-contact) output terminal: NO/NC switchable
		Functions	Running (RUN), constant-speed reached (FA1), set frequency overreached (FA2), overload notice advance signal (1) (OL), output deviation for PID control (OD), alarm signal (AL), set frequency reached (FA3), over-torque (OTQ), instantaneous power failure (IP), undervoltage (UV), torque limited (TRQ), operation time over (RNT), plug-in time over (ONT), thermal alarm signal (THM), brake release (BRK), braking error (BER), 0 Hz detection signal (ZS), speed deviation maximum (DSE), positioning completed (POK), set frequency overreached 2 (FA4), set frequency reached 2 (FA5), overload notice advance signal (2) (OL2), PID feedback comparison (FBV), communication line disconnection (NDc), logical operation result 1 (LOG1), logical operation result 2 (LOG2), logical operation result 3 (LOG3), logical operation result 4 (LOG4), logical operation result 5 (LOG5), logical operation result 6 (LOG6), capacitor life warning (WAC), cooling-fan speed drop (WAF), starting contact signal (FR), heat sink overheat warning (OHF), low-current indication signal (LOC), general-purpose output 1 (M01), general-purpose output 2 (M02), general-purpose output 3 (M03), general-purpose output 4 (M04), general-purpose output 5 (M05), general-purpose output 6 (M06), inverter ready (IRDY), forward rotation (FWR), reverse rotation (RVR), major failure (MJA), alarm code 0 to 3 (AC0 to AC3)
		Monitor output terminals	Analog voltage output, analog current output, pulse-string output (e.g., A-F, D-F [n-fold, pulse output only], A, T, V, P)
Monitoring on display			Output frequency, output current, output torque, frequency conversion data, trip history, input/output terminal status, electric power, and others
Other functions			Free V/f setting (7 breakpoints), frequency upper/lower limit, jump (center) frequency, acceleration/deceleration according to characteristic curve, manual torque boost level/breakpoint, energy-saving operation, analog meter adjustment, start frequency setting, carrier frequency adjustment, electronic thermal function (available also for free setting), external start/end frequency/frequency rate, analog input selection, retry after trip, restart after instantaneous power failure, output of various signals, starting with reduced voltage, overload restriction, initial-value setting, automatic deceleration at power failure, AVR function, fuzzy acceleration/deceleration, online/offline auto-tuning, high-torque multi-motor operation (sensorless vector control of two motors by one inverter)
Protective functions			Overcurrent protection, overvoltage protection, undervoltage protection, electronic thermal protection, temperature error protection, instantaneous power failure protection, phase loss input protection, braking-resistor overload protection, ground-fault current detection at power-on, USP error, external trip, emergency stop trip, CT error, communication error, option board error, and others
Environmental conditions	Ambient operating/storage temperature(*7)/ humidity		-10-50˚C / -20-65˚C / 20-90%RH (No condensation)
	Location		Altitude 1,000m or less, indoors (no corrosive gases or dust)
Options	Digital input expansion card		SJ-DG (4digits BCD, 16bits binary)
	Feedback expansion card		SJ-FB (vector control loop speed sensor)
	Network interface card		SJ-DN(DeviceNetTM), SJ-PBT(PROFIBUSR), SJ-LW(LONWORKSR)
	Others		EMI filters, input/output reactors, radio noize filters, braking resistors, braking units, LCR filter, communication cables

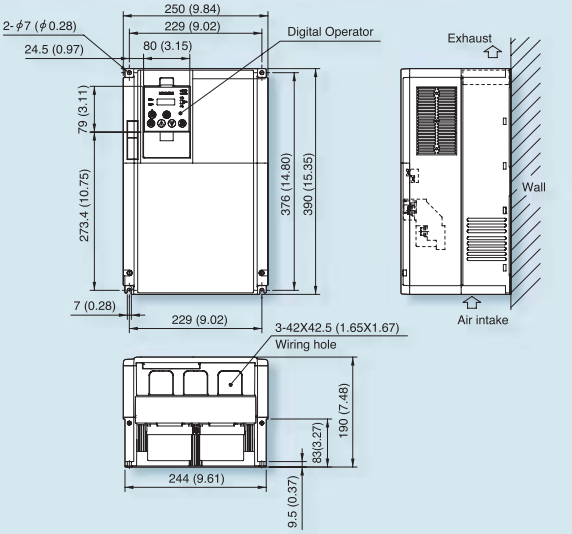
*1: The protection method conforms to JEM 1030.
*2: The applicable motor refers to Hitachi standard 3-phase motor (4-pole).
To use other motors, be sure to prevent the rated motor current (50Hz) from exceeding the rated output current of the inverter.
*3: The output voltage decreases as the main power supply voltage decreases except for the use of AVR function.
*4: Braking resistor is not integrated in the inverter. Please install optional braking resistor or dynamic braking unit when large braking torque is required.
*5: Conforms to the test method specified in JIS C0040(1999).
*6: To operate the motor beyond 50/60Hz, please consult with the motor manufacturer about the maximum allowable rotation speed.
*7: Storage temperature refers to the temperature in transportation.
*8: Please be sure to connect DC reactor attached to 1850HF, 3150HF and 4000HF.

DIMENSIONS

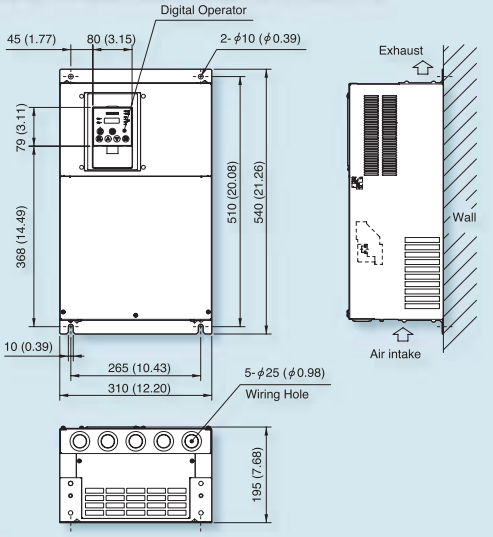
● SJ700-055-110 LFUF2,LFF2/HFEF2, HFUF2,HFF2



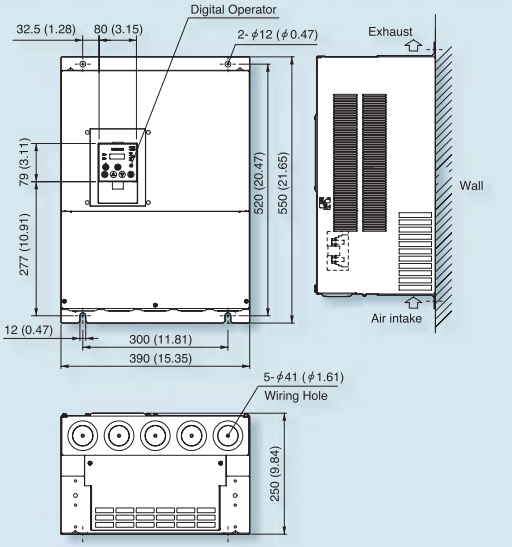
● SJ700-150-220 LFUF2,LFF2/HFEF2, HFUF2,HFF2



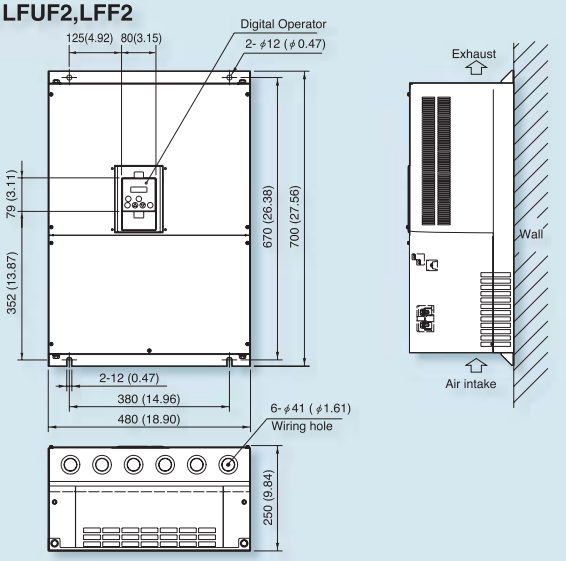
● SJ700-300 LFUF2,LFF2/HFEF2, HFUF2,HFF2



● SJ700-370-450 LFUF2,LFF2/370-550HFEF2, HFUF2,HFF2



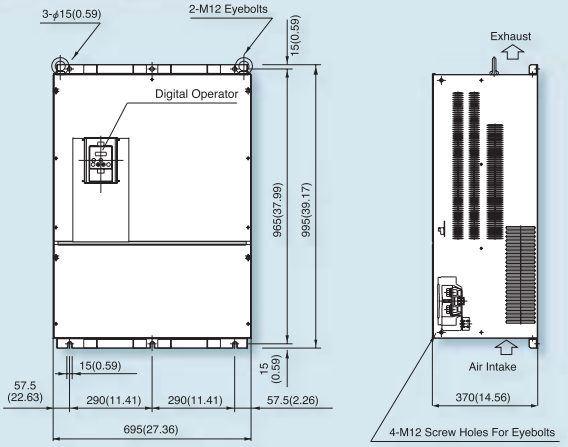
● SJ700-550 LFUF2,LFF2



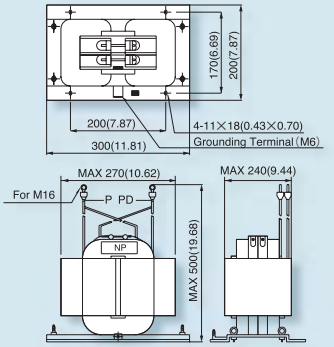
[Unit : mm(inch)]
Inches for reference only.

DIMENSIONS

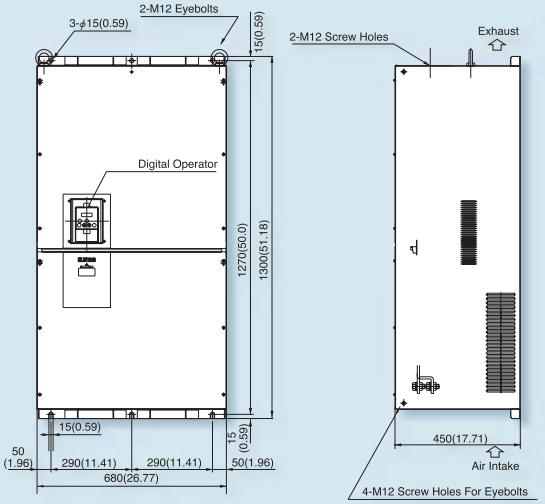
●SJ700-1850HFE2,HFU2,HF2



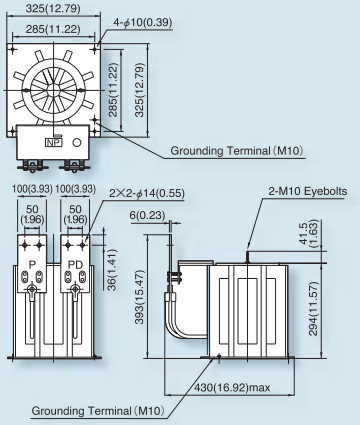
●Attachment DC reactor(DCL-H-185)



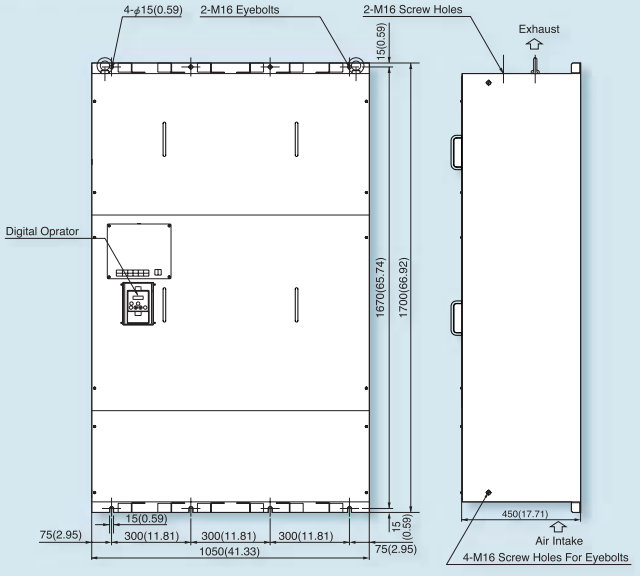
●SJ700-3150HFE2,HFU2,HF2



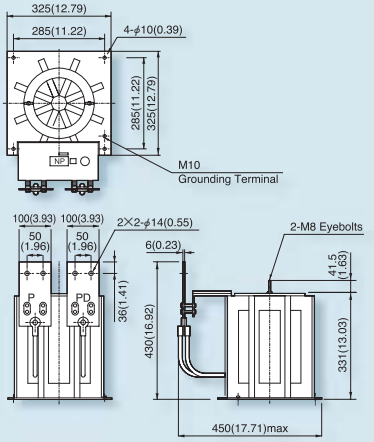
●Attachment DC reactor(DCL-H-315)



●SJ700-4000HFE2,HFU2,HF2



●Attachment DC reactor(DCL-H-400)



[Unit : mm (inch)]
Inches for reference only.

OPERATION and PROGRAMMING

SJ700 Series can be easily operated with the digital operator provided as standard. The digital operator can also be detached and can be used for remote-control. Multilingual (English, French, German, Italian , Spanish and Portuguese) operator with copy function (SRW-0EX) and digital operator with potentiometer are also available as options.

Parameter Display
Displays frequency, motor current, rotational speed of the motor, and an alarm code.

Monitor LEDs
Shows drive status.

RUN key enable LED
Lights up when the inverter is ready to respond to the RUN key.

RUN Key
Press to run the motor.

STOP/RESET Key
Press to stop the drive or reset an alarm.

Function Key
Press to set or monitor a parameter value.

Power LED
Lights when the power input to the drive is ON.

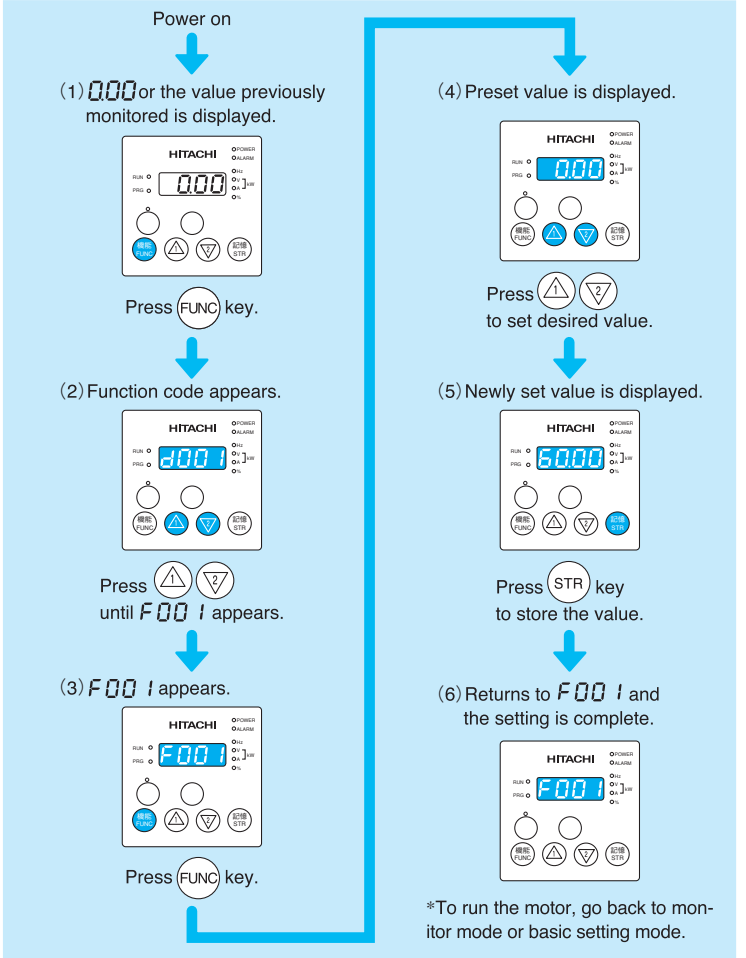
ALARM LED
Lights to indicate that the inverter has tripped.

Display Unit LEDs
Indicates the unit associated with the parameter display.

Store Key
Press to write the new value to the EEPROM.

Up/Down Keys
Press up or down to sequence through parameters and functions shown on the display, and increment/decrement values.

●Setting the output frequency


Power on
(1) 0.00 or the value previously monitored is displayed.
Press FUNC key.
(2) Function code appears.
Press ▲ ▼ until F001 appears.
(3) F001 appears.
Press FUNC key.
(4) Preset value is displayed.
Press ▲ ▼ to set desired value.
(5) Newly set value is displayed.
Press STR key to store the value.
(6) Returns to F001 and the setting is complete.
*To run the motor, go back to monitor mode or basic setting mode.

●The contents of a basic mode display.(default)

If a desired parameter is not displayed, check the setting of function "b037" (function code display restriction). To display all parameters, specify "00" for "b037".

No.	Display code	Item
1	d001 to d104	Monitor display
2	F001	Output frequency setting
3	F002	Acceleration (1) time setting
4	F003	Deceleration (1) time setting
5	F004	Operation direction setting
6	A001	Frequency source setting
7	A002	Run command source setting
8	A003	Base frequency setting
9	A004	Maximum frequency setting
10	A005	[AT] selection
11	A020	Multi-speed frequency setting
12	A021	Multi-speed 1 setting
13	A022	Multi-speed 2 setting
14	A023	Multi-speed 3 setting
15	A044	1st control method
16	A045	V/f gain setting
17	A085	Operation mode selection
18	b001	Selection of restart mode
19	b002	Allowable under-voltage power failure time
20	b008	Retry-after-trip selection
21	b011	Retry wait time after trip
22	b037	Function code display restriction
23	b083	Carrier frequency setting
24	b084	Initialization mode selection
25	b130	Selection of overvoltage suppression function
26	b131	Setting of overvoltage suppression level
27	C021	Setting of intelligent output terminal 11
28	C022	Setting of intelligent output terminal 12
29	C036	Alarm relay active state

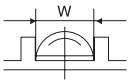
TERMINALS

MAIN CIRCUIT TERMINALS

●Terminal Description

Terminal Symbol	Terminal Name	Terminal Symbol	Terminal Name
R(L1), S(L2), T(L3)	Main power supply input terminals	P(+), N(-)	External braking unit connection terminals
U(T1), V(T2), W(T3)	Inverter output terminals	⏚ (G)	Ground connection terminal
PD(+1), P(+)	DC reactor connection terminals	R0(R0), T0(T0)	Control power supply input terminals
P(+), RB(RB)	External braking resistor connection terminals		

●Screw Diameter and Terminal Width



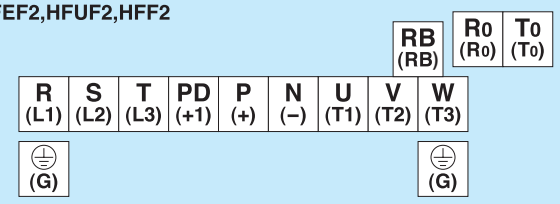
W:Terminal width

Model	Screw diameter	Terminal width (mm)
055,075LFUF2,LF2,HFEF2,HFUF2,HF2	M5	18
110LFUF2,LF2,HFEF2,HFUF2,HF2	M6	18
150,185LFUF2,LF2,150-300HFEF2,HFUF2,HF2	M6	23
220,300LFUF2,LF2	M8	23 *1
370,450LFUF2,LF2,370-550HFEF2,HFUF2,HF2	M8	29
550LFUF2LF2,LF2	M10	40 *2
1850HFE2,HFU2,HF2	M16	51 *3
3150HFE2,HFU2,HF2	M16	45 *3
4000HFE2,HFU2,HF2	M12	50
R0T0 terminals (All models)	M4	9

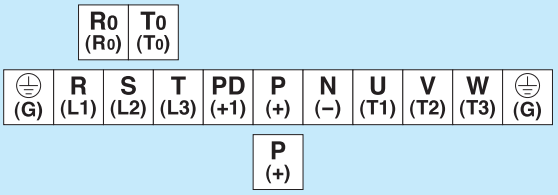
*1 Ground Screw diameter is M6
*2 Ground Screw diameter is M8
*3 Ground Screw diameter is M12

●Terminal Arrangement

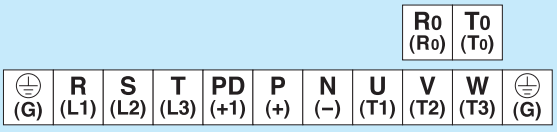
■ 055–220LFUF2,LFF2, HFEF2,HFUF2,HFF2



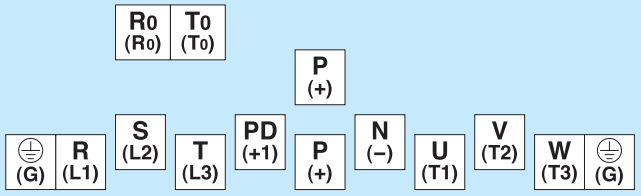
■ 1850HFE2,HFU2, HF2



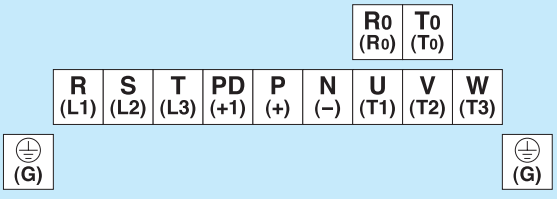
■ 300–370LFUF2,LFF2
300–550HFEF2, HFUF2,HFF2



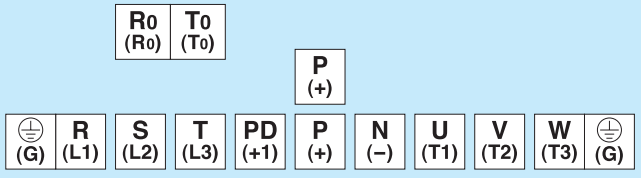
■ 3150HFE2,HFU2, HF2



■ 450–550LFUF2,LFF2



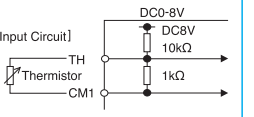
■ 4000HFE2, HFU2, HF2



TERMINALS

CONTROL CIRCUIT TERMINALS

●Terminal Description

			Symbol	Name	Explanation of Terminals	Ratings
Analog	Power Supply		L	Common Terminal for Analog Power Source	Common terminal for H, O, O2, OI, AM, and AMI. Do not ground.	-
			H	Power Source for Frequency Setting	Power supply for frequency command input	DC 10V, 20mA max.
	Frequency Setting		O	Frequency Command Terminal	Maximum frequency is attained at DC 10V in DC 0-10V range. Set the voltage at A014 to command maximum frequency below DC 10V.	Input impedance: 10kΩ, Allowable input voltage range: DC -0.3-+12V
			O2	Frequency Command Extra Terminal	O2 signal is added to the frequency command of O or OI in DC 0-±10V range. By changing configuration, frequency command can be input also at O2 terminal.	Input impedance:10kΩ, Allowable input voltage range: DC 0-±12V
			OI	Frequency Command Terminal	Maximum frequency is attained at DC 20mA in DC 4-20mA range. When the intelligent terminal configured as AT is on, OI signal is enabled.	Input impedance: 100Ω, Allowable input voltage range: DC 0-24mA
	Monitor Output		AM	Analog Output Monitor (Voltage)	Selection of one function from: Output frequency, output current, torque, output voltage, input power, electronic thermal load ratio, and LAD frequency.	DC 0-10V, 2mA max.
			AMI	Analog Output Monitor (Current)		DC 4-20mA, 250Ω max.
Digital	Monitor Output		FM	Digital Monitor (Voltage)	[DC0-10V output (PWM output)] Selection of one function from: Output frequency, output current, torque, output voltage, input power, electronic thermal load ratio, and LAD frequency. [Digital pulse output (Pulse voltage DC 0/10V)] Outputs the value of output frequency as digital pulse (duty 50%)	Digital output frequency range: 0-3.6kHz, 1.2mA max.
	Power Supply		P24	Power Terminal for Interface	Internal power supply for input terminals. In the case of source type logic, common terminal for contact input terminals.	DC 24V, 100mA max.
			CM1	Common Terminal for Interface	Common terminal for P24, TH, and FM. In the case of sink type logic, common terminal for contact input terminals. Do not ground.	-
	Contact Input	Run Command	FW	Forward Command Input	The motor runs forward when FW terminal is ON, and stops when FW is OFF.	[Input ON condition] Voltage between each terminal and PLC: DC 18V min. [Input OFF condition] Voltage between each terminal and PLC: DC 3V max. Input impedance between each terminal and PLC: 4.7Ω Allowable maximum voltage between each terminal and PLC: DC 27V
		Functions	1 2 3 4 5 6 7 8	Intelligent Input Terminals	Assign 8 functions to terminals. (Refer to the standard specifications for the functions.)	
		Common Terminal	PLC	Common Terminal for Intelligent Input Terminals, Common Terminal for External Power Supply for PLCs, etc.	Select sink or source logic with the short-circuit bar on the control terminals. Sink logic: Short P24 to PLC / Source logic: Short CM1 to PLC. When applying external power source, remove the short-circuit bar and connect PLC terminal to the external device.	
	Open Collector Output	State	11 12 13 14 15	Intelligent Output Terminals	Assign 5 functions to open collector outputs. When the alarm code is selected at C062, terminal 11-13 or 11-14 are reserved for error codes of inverter trip. (Refer to the standard specifications for the functions.) Both sink and source logic are always applicable between each terminal and CM1.	Decrease in voltage between each terminal and CM2: 4V max. during ON Allowable maximum voltage: DC 27V Allowable maximum current: 50mA
			CM2	Common Terminal for Intelligent Output Terminals	Common terminal for intelligent output terminal 11-15.	
Analog	Analog Input	Sensor	TH	Thermistor Input Terminals	The inverter trips when the external thermistor detects abnormal temperature. Common terminal is CM1. [Recommended thermistor characteristics] Allowable rated power: 100mW or over. Impedance in the case of abnormal temperature: 3kΩ Note: Thermal protection level can be set between 0 and 9999Ω.	Allowable input voltage range 
Digital	Relay Output	State/ Alarm	AL0 AL1 AL2	Alarm Output Terminals	In default setting, an alarm is activated when inverter output is turned off by a protective function.	Maximum capacity of relays AL1-AL0: AC 250V, 2A(R load)/0.2A(L load) DC 30V, 8A(R load)/0.6A(L load) AL2-AL0: AC 250V, 1A(R load)/0.2A(L load) DC 30V, 1A(R load)/0.2A(L load) Minimum capacity of relays AL1-AL0, AL2-AL0: AC100V, 10mA DC5V, 100mA

● Terminal Arrangement

H	O2	AM	FM	TH	FW	8	CM1	5	3	1	14	13	11	AL1
L	O	OI	AM1	P24	PLC	CM1	7	6	4	2	15	CM2	12	AL0	AL2

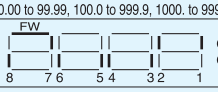
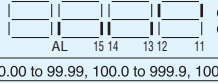
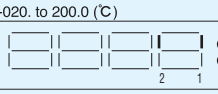
Screw diameter:M3

Terminal Width:6.4mm

PROTECTIVE FUNCTIONS

●MONITORING FUNCTIONS and MAIN PROFILE PARAMETERS

[○= Allowed ×= Not permitted]

Code		Function Name	Monitored data or setting	Default Setting			Setting during operation (allowed or not)	Change during operation (allowed or not)
				-FE(CE)	-FU(UL)	-F(JP)		
Monitor Mode	d001	Output frequency monitor	0.00 to 99.99, 100.0 to 400.0 (Hz)	-	-	-	○	-
	d002	Output current monitor	0.0 to 999.9, 1000 to 9999 (A)	-	-	-	-	-
	d003	Rotation direction minitoring	F (forward rotation), o (stopped), r (reverse rotation)	-	-	-	-	-
	d004	Process variable (PV), PID feedback monitor	0.00 to 99.99, 100.0 to 999.9, 1000. to 9999. 1000 to 9999 (10000 to 99990), 「100 to 「999 (10000 to 999000)	-	-	-	-	-
	d005	Intelligent input terminal status	 (Example) FW, 7, 2, 1 : ON 8, 6, 5, 4, 3 : OFF	-	-	-	-	-
	d006	Intelligent output terminal status	 (Example) 12, 11 : ON AL, 15, 14, 13 :OFF	-	-	-	-	-
	d007	Scaled output frequency monitoring	0.00 to 99.99, 100.0 to 999.9, 1000. to 9999., 1000 to 3996 (10000 to 39960)	-	-	-	○	-
	d008	Actual-frequency monitoring	-400. to -100., -99.9 to 0.00 to 99.99, 100.0 to 400.0 (Hz)	-	-	-	-	-
	d009	Torque command monitoring	-200. to +200. (%)	-	-	-	-	-
	d010	Torque bias monitoring	-200. to +200. (%)		-	-	-	-
	d012	Torque monitoring	-200. to +200. (%)	-	-	-	-	-
	d013	Output voltage monitoring	0.0 to 600.0 (V)	-	-	-	-	-
	d014	Power monitoring	0.0 to 999.9 (kW)	-	-	-	-	-
	d015	Cumulative power monitoring	0.0 to 999.9, 1000. to 9999.,1000 to 9999 (10000 to 99990), 「100 to 「999 (100000 to 999000)	-	-	-	-	-
	d016	Cumulative operation RUN time monitoring	0. to 9999., 1000 to 9999 (10000 to 99990), 「100 to 「999 (10000 to 999000) (hr)	-	-	-	-	-
	d017	Cumulative power-on time monitoring	0. to 9999., 1000 to 9999 (10000 to 99990), 「100 to 「999 (10000 to 999000) (hr)	-	-	-	-	-
	d018	Heat sink temperature monitoring	-020. to 200.0 (℃)	-	-	-	-	-
	d019	Motor temperature monitoring	-020. to 200.0 (℃)	-	-	-	-	-
	d022	Life-check monitoring	 1: Capacitor on main circuit board 2: Cooling-fan speed drop	-	-	-	-	-
	d023	Program counter	0 to 512	-	-	-	-	-
	d024	Program number monitoring	0000 to 9999	-	-	-	-	-
	d025	User monitor 0	-2147483647 to 2147483647 (upper 4 digits including "-")	-	-	-	-	-
	d026	User monitor 1	-2147483647 to 2147483647 (upper 4 digits including "-")	-	-	-	-	-
	d027	User monitor 2	-2147483647 to 2147483647 (upper 4 digits including "-")	-	-	-	-	-
	d028	Pulse counter	0 to 2147483647 (upper 4 digits)	-	-	-	-	-
	d029	Position setting monitor	-1073741823 to 1073741823 (upper 4 digits including "-")	-	-	-	-	-
	d030	Position feedback monitor	-1073741823 to 1073741823 (upper 4 digits including "-")	-	-	-	-	-
	d080	Trip Counter	0. to 9999., 1000 to 6553 (10000 to 65530) (times)	-	-	-	-	-
	d081 to d086	Trip monitoring 1-6	Factor, frequency (Hz), current (A), voltage across P-N (V), running time (hours), power-on time (hours)	-	-	-	-	-
	d090	Programming error monitoring	Warning code	-	-	-	-	-
	d102	DC voltage monitoring	0.0 to 999.9 (V)	-	-	-	-	-
	d103	BRD load factor monitoring	0.0 to 100.0 (%)	-	-	-	-	-
	d104	Electronic thermal overload monitoring	0.0 to 100.0 (%)	-	-	-	-	-
Setting Mode	F001	Output frequency setting	0.0, "start frequency" to "maximum frequency" (or maximum frequency, 2nd/3rd motors) (Hz) 0.0 to 100.0 (when PID function is enabled)	0.00Hz	0.00Hz	0.00Hz	○	○
	F002	Acceleration (1) time setting	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	30.00s	30.00s	30.00s	○	○
	F202	Acceleration (1) time setting, 2nd motor	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	30.00s	30.00s	30.00s	○	○
	F302	Acceleration (1) time setting, 3rd motor	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	30.00s	30.00s	30.00s	○	○
	F003	Deceleration (1) time setting	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	30.00s	30.00s	30.00s	○	○
	F203	Deceleration time setting, 2nd motor	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	30.00s	30.00s	30.00s	○	○
	F303	Deceleration time setting, 3rd motor	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	30.00s	30.00s	30.00s	○	○
	F004	Keypad Run key routing	00 (forward rotation), 01 (reverse rotation)	00	00	00	×	×
Expanded Function	A---	A Group: Standard functions						
	b---	b Group: Fine tuning functions						
	C---	C Group: Intelligent terminal functions						
	H---	H Group: Motor constants functions						
	P---	P Group: Expansion card functions						
	U---	U Group: User-selectable menu functions						

●A GROUP: STANDARD FUNCTIONS

[○= Allowed ×= Not permitted]

Code		Function Name	Monitored data or setting	Default Setting			Setting during operation (allowed or not)	Change during operation (allowed or not)
				-FE(CE)	-FU(UL)	-F(JP)		
Basic settings	A001	Frequency source setting	00 (keypad potentiometer) (*1), 01 (control circuit terminal block), 02 (digital operator), 03 (RS485), 04 (option 1), 05 (option 2), 06 (pulse-string input), 07 (easy sequence), 10 (operation function result)	01	01	02	×	×
	A002	Run command source setting	01 (control circuit terminal block), 02 (digital operator), 03 (RS485), 04 (option 1), 05 (option 2)	01	01	02	×	×
	A003	Base frequency setting	30. to "maximum frequency " (Hz)	50.	60.	60.	×	×
	A203	Base frequency setting, 2nd motor	30. to "maximum frequency, 2nd motor" (Hz)	50.	60.	60.	×	×
	A303	Base frequency setting, 3rd motor	30. to "maximum frequency, 3rd motor" (Hz)	50.	60.	60.	×	×
	A004	Maximum frequency setting	30. to 400. (Hz)	50.	60.	60.	×	×
	A204	Maximum frequency setting, 2nd motor	30. to 400. (Hz)	50.	60.	60.	×	×
	A304	Maximum frequency setting, 3rd motor	30. to 400. (Hz)	50.	60.	60.	×	×
Analog input and others	A005	[AT] selection	00 (switching between O and OI terminals), 01 (switching between O and O2 terminals), 02 (switching between O terminal and keypad potentiometer) (*1), 03 (switching between OI terminal and keypad potentiometer) (*1), 04 (switching between O2 and keypad potentiometer) (*1)	00	00	00	×	×
	A006	[O2] selection	00 (single), 01 (auxiliary frequency input via O and OI terminals) (nonreversible), 02 (auxiliary frequency input via O and OI terminals) (reversible), 03 (disabling O2 terminal)	03	03	03	×	×
	A011	O-L input active range start frequency	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	A012	O-L input active range end frequency	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○

*1 This setting is valid only when the OPE-SR is connected.

[○= Allowed ×= Not permitted]

	Code	Function Name	Monitored data or setting	Default Setting			Setting during operation (allowed or not)	Change during operation (allowed or not)
				-FE(CE)	-FU(UL)	-F(JP)		
Analog input and others	A013	O-L input active range start voltabe	0. to "[O]-[L] input active range end voltage" (%)	0.	0.	0.	×	○
	A014	O-L input active range end voltabe	"[O]-[L] input active range start voltage" to 100. (%)	100.	100.	100.	×	○
	A015	O-L input active range start frequency selection	00 (external start frequency), 01 (0 Hz)	01	01	01	×	○
	A016	External frequency filter time constant	1. to 30. or 31. (500 ms filter ±0.1 Hz with hysteresis)	31.	31.	31.	×	○
	A017	Easy sequence function selection	00 (disabling), 01 (enabling)	00	00	00	×	×
Multispeed operation and Jogging	A019	Multispeed operation selection	00 (binary: 16 speeds selectable with 4 terminals), 01 (bit: 8 speeds selectable with 7 terminals)	00	00	00	×	×
	A020	Multispeed frequency setting	0.0 or “start frequency” to “maximum frequency” (Hz)	0.00	0.00	0.00	○	○
	A220	Multispeed frequency setting, 2nd motor	0.0 or “start frequency” to “maximum frequency, 2nd motor” (Hz)	0.00	0.00	0.00	○	○
	A320	Multispeed frequency setting, 3rd motor	0.0 or “start frequency” to “maximum frequency, 3rd motor” (Hz)	0.00	0.00	0.00	○	○
	A021 ┃ A035	Multispeed 1-15 setting	0.0 or “start frequency” to “n-th maximum frequency” (Hz)	0.00	0.00	0.00	○	○
	A038	Jog frequency setting	"Start frequency" to 9.99 (Hz)	1.00	1.00	1.00	○	○
	A039	Jog stop mode	00 (free-running after jogging stops [disabled during operation]), 01 (deceleration and stop after jogging stops [disabled during operation]), 02 (DC braking after jogging stops [disabled during operation]), 03 (free-running after jogging stops [enabled during operation]), 04 (deceleration and stop after jogging stops [enabled during operation]), 05 (DC braking after jogging stops [enabled during operation])	00	00	00	×	○
V/f Characteristic	A041	Torque boost method selection	00(Manual torque boost) / 01(Automatic torque boost)	00	00	00	×	×
	A241	Torque boost method selection, 2nd motor	00(Manual torque boost) / 01(Automatic torque boost)	00	00	00	×	×
	A042	Manual torque boost value	0.0 to 20.0 (%)	1.0	1.0	1.0	○	○
	A242	Manual torque boost value, 2nd motor	0.0 to 20.0 (%)	1.0	1.0	1.0	○	○
	A342	Manual torque boost value, 3rd motor	0.0 to 20.0 (%)	1.0	1.0	1.0	○	○
	A043	Manual torque boost frequency adjustment	0.0 to 50.0 (%)	5.0	5.0	5.0	○	○
	A243	Manual torque boost frequency adjustment, 2nd motor	0.0 to 50.0 (%)	5.0	5.0	5.0	○	○
	A343	Manual torque boost frequency adjustment, 3rd motor	0.0 to 50.0 (%)	5.0	5.0	5.0	○	○
	A044	V/F characteristic curve selection, 1st motor	00 (VC), 01 (VP), 02 (free V/f), 03 (sensorless vector control), 04 (0Hz-range sensorless vector), 05 (vector with sensor)	00	00	00	×	×
	A244	V/F characteristic curve selection, 2nd motor	00 (VC), 01 (VP), 02 (free V/f), 03 (sensorless vector control), 04 (0Hz-range sensorless vector)	00	00	00	×	×
	A344	V/F characteristic curve selection, 3rd motor	00(VC), 01(VP)	00	00	00	×	×
	A045	V/f gain setting	20. to 100. (%)	100.	100.	100.	○	○
	A046	Voltage compensation gain setting for automatic torque boost. 1st motor	0. to 255.	100.	100.	100.	○	○
	A246	Voltage compensation gain setting for automatic torque boost, 2nd motor	0. to 255.	100.	100.	100.	○	○
	A047	Slippage compensation gain setting for automatic torque boost, 1st motor	0. to 255.	100.	100.	100.	○	○
	A247	Slippage compensation gain setting for automatic torque boost, 2nd motor	0. to 255.	100.	100.	100.	○	○
DC Braking	A051	DC braking enable	00 (disabling), 01 (enabling), 02 (set frequency only)	00	00	00	×	○
	A052	DC braking frequency setting	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.50	0.50	0.50	×	○
	A053	DC braking wait time	0.0 to 5.0 (s)	0.0	0.0	0.0	×	○
	A054	DC braking force during deceleration	0. to 100. (%)	0	0	0	×	○
	A055	DC braking time for deceleration	0.0 to 60.0 (s)	0.0	0.0	0.0	×	○
	A056	DC braking/edge or level detection for [DB] input	00 (edge operation), 01 (level operation)	01	01	01	×	○
	A057	DC braking force for starting	0. to 100.(%)	0.	0.	0.	×	○
	A058	DC braking time for starting	0.0 to 60.0(s)	0.0	0.0	0.0	×	○
	A059	DC braking carrier frequency setting	0.5 to 15.0(kHz)	5.0	5.0	5.0	×	×
Frequency Upper/Lower Limit and Jump Frequency	A061	Frequency upper limit setting	0.00 or "1st minimum frequency limit" to "maximum frequency" (Hz)	0.00	0.00	0.00	×	○
	A261	Frequency upper limit setting, 2nd motor	0.00 or "2nd minimum frequency limit" to "maximum frequency, 2nd motor" (Hz)	0.00	0.00	0.00	×	○
	A062	Frequency lower limit setting	0.00 or "start frequency" to "maximum frequency limit" (Hz)	0.00	0.00	0.00	×	○
	A262	Frequency lower limit setting, 2nd motor	0.00 or "start frequency" to "maximum frequency, 2nd motor limit" (Hz)	0.00	0.00	0.00	×	○
	A063	Jump (center) frequency setting 1	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	A064	Jump (hysteresis) frequency width setting 1	0.00 to 10.00 (Hz)	0.50	0.50	0.50	×	○
	A065	Jump (center) frequency setting 2	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	A066	Jump (hysteresis) frequency width setting 2	0.00 to 10.00 (Hz)	0.50	0.50	0.50	×	○
	A067	Jump (center) frequency setting 3	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	A068	Jump (hysteresis) frequency width setting 3	0.00 to 10.00 (Hz)	0.50	0.50	0.50	×	○
	A069	Acceleration stop time frequency setting	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	A070	Acceleration stop time frequency setting	0.0 to 60.0 (s)	0.0	0.0	0.0	×	○
PID Control	A071	PID function enable	00 (disabling), 01 (enabling), 02 (enabling inverted-data output)	00	00	00	×	○
	A072	PID proportional gain	0.2 to 5.0	1.0	1.0	1.0	○	○
	A073	PID integral time constant	0.0 to 999.9, 1000. to 3600.0 (s)	1.0	1.0	1.0	○	○
	A074	PID derivative gain	0.00 to 99.99, 100.0 (s)	0.00	0.00	0.00	○	○
	A075	PV scale conversion	0.01 to 99.99	1.00	1.00	1.00	×	○
	A076	PV source setting	00 (input via OI), 01 (input via O), 02 (external communication), 03 (pulse-string frequency input), 10 (operation result output)	00	00	00	×	○
	A077	Output of inverted PID deviation	00(OFF), 01 (ON)	00	00	00	×	○
	A078	PID variation range	0.0 to 100.0 (%)	0.0	0.0	0.0	×	○
AVR	A081	AVR function select	00 (always on), 01 (always off), 02 (off during deceleration)	00	00	00	×	×
	A082	AVR voltage select	200 V class: 200, 215, 220, 230, 240 (V) 400 V class: 380, 400, 415, 440, 460, 480 (V)	230/460	230/400	200/400	×	×
Operation Mode and acceleration/deceleration function	A085	Operation mode selection	00(Normal operation)/ 01(Energy-saving operation)/ 02(Fuzzy operation)	00	00	00	×	×
	A086	Energy saving mode tuning	0.1 to 100.0	50.0	50.0	50.0	○	○
	A092	Acceleration (2) time setting	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	15.00	15.00	15.00	○	○
	A292	Acceleration (2) time setting, 2nd motor	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	15.00	15.00	15.00	○	○
	A392	Acceleration (2) time setting, 3rd motor	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	15.00	15.00	15.00	○	○
	A093	Deceleration (2) time setting	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	15.00	15.00	15.00	○	○
	A293	Deceleration (2) time setting, 2nd motor	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	15.00	15.00	15.00	○	○
	A393	Deceleration (2) time setting, 3rd motor	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	15.00	15.00	15.00	○	○
	A094	Select method to switch to Acc2/Dec2 profile	00 (switching by 2CH terminal), 01 (switching by setting), 02 (switching only when rotation is reversed)	00	00	00	×	×
	A294	Select method to switch to Acc2/Dec2, 2nd motor	00 (switching by 2CH terminal), 01 (switching by setting), 02 (switching only when rotation is reversed)	00	00	00	×	×
	A095	Acc1 to Acc2 frequency transition point	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	×
	A295	Acc1 to Acc2 frequency transition point, 2nd motor	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	×
	A096	Dec1 to Dec2 frequency transition point	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	×
	A296	Dec1 to Dec2 frequency transition point, 2nd motor	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	×
	A097	Acceleration curve selection	00 (linear), 01 (S curve), 02 (U curve), 03 (inverted-U curve), 04 (EL-S curve)	00	00	00	×	×
	A098	Deceleration curve selection	00 (linear), 01 (S curve), 02 (U curve), 03 (inverted-U curve), 04 (EL-S curve)	00	00	00	×	×
External frequency adjustment	A101	OI-L input active range start frequency	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	×
	A102	OI-L input active range end frequency	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	A103	OI-L input active range start current	0. to "[OI]-[L] input active range end current" (%)	20.	20.	20.	×	○
	A104	OI-L input active range end current	"[OI]-[L] input active range start current" to 100. (%)	100.	100.	100.	×	○

[○= Allowed ×= Not permitted]

	Code	Function Name	Monitored data or setting	Default Setting			Setting during operation (allowed or not)	Change during operation (allowed or not)
				-FE(CE)	-FU(UL)	-F(JP)		
External frequency adjustment	A105	OI-L input start frequency enable	00 (external start frequency), 1 (0 Hz)	00	00	00	×	○
	A111	O2-L input active range start frequency	-400. to -100., -99.9 to 0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	A112	O2-L input active range end frequency	-400. to -100., -99.9 to 0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	A113	O2-L input active range start voltage	-100. to 02 end-frequency rate (%)	-100.	-100.	-100.	×	○
	A114	O2-L input active range end voltage	"02 start-frequency rate" to 100. (%)	100.	100.	100.	×	○
Acceleration deceleration	A131	Acceleration curve constants setting	01 (smallest swelling) to 10 (largest swelling)	02	02	02	×	○
	A132	Deceleration curve constants setting	01 (smallest swelling) to 10 (largest swelling)	02	02	02	×	○
Operation-target frequency	A141	Operation-target frequency selection 1	00 (digital operator), 01 (keypad potentiometer), 02 (input via O), 03 (input via OI), 04 (external communication), 05 (option 1), 06 (option 2), 07 (pulse-string frequency input)	02	02	02	×	○
	A142	Operation-target frequency selection 2	00 (digital operator), 01 (keypad potentiometer), 02 (input via O), 03 (input via OI), 04 (external communication), 05 (option 1), 06 (option 2), 07 (pulse-string frequency input)	03	03	03	×	○
	A143	Operator selection	00 (addition: A141 + A142), 01 (subtraction: A141 - A142), 02 (multiplication: A141 x A142)	00	00	00	×	○
	A145	Frequency to be added	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	A146	Sign of the frequency to be added	00 (frequency command + A145), 01 (frequency command - A145)	00	00	00	×	○
Acceleration and deceleration	A150	EL-S-curve acceleration ratio 1	0. to 50. (%)	25.	25.	25.	×	×
	A151	EL-S-curve acceleration ratio 2	0. to 50. (%)	25.	25.	25.	×	×
	A152	EL-S-curve deceleration ratio 1	0. to 50. (%)	25.	25.	25.	×	×
	A153	EL-S-curve deceleration ratio 2	0. to 50. (%)	25.	25.	25.	×	×

●B GROUP: FINE TUNING FUNCTIONS

[○= Allowed ×= Not permitted]

	Code	Function Name	Monitored data or setting	Default Setting			Setting during operation (allowed or not)	Change during operation (allowed or not)
				-FE(CE)	-FU(UL)	-F(JP)		
Restart after instantaneous power failure or tripping	b001	Selection of restart mode	00 (tripping), 01 (starting with 0 Hz), 02 (starting with matching frequency), 03 (tripping after deceleration and stopping with matching frequency), 04 (restarting with active matching frequency)	00	00	00	×	○
	b002	Allowable under-voltage power failure time	0.3 to 25.0 (s)	1.0	1.0	1.0	×	○
	b003	Retry wait time before motor restart	0.3 to 100.0 (s)	1.0	1.0	1.0	×	○
	b004	Instantaneous power failure/under-voltage trip alarm enable	00 (disabling), 01 (enabling), 02 (disabling during stopping and decelerating to stop)	00	00	00	×	○
	b005	Number of restarts on power failure/under-voltage trip events	00 (16 times), 01 (unlimited)	00	00	00	×	○
	b006	Phase loss detection enable	00 (disabling), 01 (enabling)	00	00	00	×	○
	b007	Restart frequency threshold	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	b008	Selection of retry after tripping	00 (tripping), 01 (starting with 0 Hz), 02 (starting with matching frequency), 03 (tripping after deceleration and stopping with matching frequency), 04 (restarting with active matching frequency)	00	00	00	×	○
	b009	Selection of retry after undervoltage	00 (16 times), 01 (unlimited)	00	00	00	×	○
	b010	Selection of retry count after overvoltage or overcurrent	1 to 3 (times)	3	3	3	×	○
	b011	Retry wait time after tripping	0.3 to 100.0 (s)	1.0	1.0	1.0	×	○
Electronic thermal function	b012	Electronic thermal setting (calculated within the inverter from current output)	0.20 x "rated current" to 1.00 x "rated current" (A)	Rated current of inverterx 1..0			×	○
	b212	Electronic thermal setting (calculated within the inverter from current output), 2nd motor	0.20 x "rated current" to 1.00 x "rated current" (A)				×	○
	b312	Electronic thermal setting (calculated within the inverter from current output), 3rd motor	0.20 x "rated current" to 1.00 x "rated current" (A)				×	○
	b013	Electronic thermal characteristic	00 (reduced-torque characteristic), 01 (constant-torque characteristic), 02 (free setting)	01	01	00	×	○
	b213	Electronic thermal characteristic, 2nd motor	00 (reduced-torque characteristic), 01 (constant-torque characteristic), 02 (free setting)	01	01	00	×	○
	b313	Electronic thermal characteristic, 3rd motor	00 (reduced-torque characteristic), 01 (constant-torque characteristic), 02 (free setting)	01	01	00	×	○
	b015	Free-setting electronic thermal frequency (1)	0. to 400. (Hz)	0.	0.	0.	×	○
	b016	Free-setting electronic thermal current (1)	0.00 to rated current (A)	0.0	0.0	0.0	×	○
	b017	Free-setting electronic thermal frequency (2)	0. to 400. (Hz)	0.	0.	0.	×	○
	b018	Free-setting electronic thermal current (2)	0.00 to rated current (A)	0.0	0.0	0.0	×	○
	b019	Free-setting electronic thermal frequency (3)	0. to 400. (Hz)	0.	0.	0.	×	○
	b020	Free-setting electronic thermal current (3)	0.00 to rated current (A)	0.0	0.0	0.0	×	○
Overload restriction and overcurrent restraint	b021	Overload restriction operation mode	00 (disabling), 01 (enabling during acceleration and deceleration), 02 (enabling during constant speed), 03 (enabling during acceleration and deceleration (increasing the speed during regeneration))	01	01	01	×	○
	b022	Overload restriction setting	0.20 x "rated current" to 1.00 x "rated current" (A)	Rated current x 1.50			×	○
	b023	Deceleration rate at overload restriction	0.10 to 30.00 (s)	1.00	1.00	1.00	×	○
	b024	Overload restriction operation mode (2)	00 (disabling), 01 (enabling during acceleration and deceleration), 02 (enabling during constant speed), 03 (enabling during acceleration and deceleration (increasing the speed during regeneration))	01	01	01	×	○
	b025	Overload restriction setting (2)	0.20 x "rated current" to 2.00 x "rated current" (A)	Rated current x 1.50			×	○
	b026	Deceleration rate at overload restriction (2)	0.10 to 30.00 (s)	1.00	1.00	1.00	×	○
	b027	Overcurrent suppression enable	00 (disabling), 01 (enabling)	01	01	01	×	○
	b028	Active frequency matching, scan start frequency	0.20 x "rated current" to 2.00 x "rated current" (A)	Rated current of inverterx 1..0			×	○
	b029	Active frequency matching, scan-time constant	0.10 to 30.00 (s)	0.50	0.50	0.50	×	○
	b030	Active frequency matching, restart frequency select	00 (frequency at the last shutoff), 01 (maximum frequency), 02 (set frequency)	00	00	00	×	○
software lock	b031	Software lock mode selection	00 (disabling change of data other than "b031" when SFT is on), 01 (disabling change of data other than "b031" and frequency settings when SFT is on), 02 (disabling change of data other than "b031"), 03 (disabling change of data other than "b031" and frequency settings), 10 (enabling data changes during operation)	01	01	01	×	○
Others	b034	RUN/ power-on warning time	0. to 9999. (0 to 99990), 1000 to 6553 (10000 to 655300) (hr)	0.	0.	0.	×	○
	b035	Rotational direction restriction	00 (enabling both forward and reverse rotations), 01 (enabling only forward rotation), 02 (enabling only reverse rotation)	00	00	00	×	×
	b036	Reduced voltage start selection	0 (minimum reduced voltage start time) to 255 (maximum reduced voltage start time)	06	06	06	×	○
	b037	Function code display restriction	00 (full display), 01 (function-specific display), 02 (user setting), 03 (data comparison display), 04 (basic display)	04	04	04	×	○
	b038	Initial-screen selection	00 (screen displayed when the STR key was pressed last), 01 (d001), 02 (d002), 03 (d003), 04 (d007), 05 (F001)	01	01	01	×	○
	b039	Automatic user-parameter setting function enable	00 (disabling), 01 (enabling)	00	00	00	×	○
Torque limitation	b040	Torque limit selection	00 (quadrant-specific setting), 01 (switching by terminal), 02 (analog input), 03 (option 1), 04 (option 2)	00	00	00	×	○
	b041	Torque limit(1) (Forward-driving in 4-quadrant mode)	0. to 200. (%), no (disabling torque limitation)	150.	150.	150.	×	○
	b042	Torque limit(2) (Reverse-regenerating in 4-quadrant mode)	0. to 200. (%), no (disabling torque limitation)	150.	150.	150.	×	○
	b043	Torque limit(3) (Reverse-driving in 4-quadrant mode)	0. to 200. (%), no (disabling torque limitation)	150.	150.	150.	×	○
	b044	Torque limit(4) (Forward-regenerating in 4-quadrant mode)	0. to 200. (%), no (disabling torque limitation)	150.	150.	150.	×	○
	b045	Torque limit LADSTOP enable	00 (disabling), 01 (enabling)	00	00	00	×	○
Non-stop operation at momentary power failure	b046	Reverse RUN protection enable	00 (disabling), 01 (enabling)	00	00	00	×	○
	b050	Controlled deceleration and stop on power loss	00 (disabling), 01 (enabling)	00	00	00	×	×
	b051	DC bus voltage trigger level during power loss	0.0 to 999.9, 1000. (V)	220.0/440.0	220.0/440.0	220.0/440.0	×	×
	b052	Over-voltage threshold during power loss	0.0 to 999.9, 1000. (V)	360.0/720.0	360.0/720.0	360.0/720.0	×	×
	b053	Deceleration time setting during power loss	0.01 to 99.99, 100.0 to 999.9, 1000. to 3600. (s)	1.00	1.00	1.00	×	×
	b054	Initial output frequency decrease during power loss	0.00 to 10.00 (Hz)	0.00	0.00	0.00	×	×
	b055	Proportional gain setting for nonstop operation at power loss	0.00 to 2.55	0.20	0.20	0.20	○	○

[○= Allowed ×= Not permitted]

	Code	Function Name	Monitored data or setting	Default Setting			Setting during operation (allowed or not)	Change during operation (allowed or not)
				-FE(CE)	-FU(UL)	-F(JP)		
Window comparator	b056	Integral time setting for nonstop operation at power loss	0.0 to 9.999 /10.00 to 65.55	0.100	0.100	0.100	○	○
	b060	Maximum-limit level of window comparators O	0. to 100. (lower limit : b061 + b062*2) (%)	100	100	100	○	○
	b061	Minimum-limit level of window comparators O	0. to 100. (lower limit : b060 - b062*2) (%)	0	0	0	○	○
	b062	Hysteresis width of window comparators O	0. to 10. (lower limit : b061 - b062 / 2) (%)	0	0	0	○	○
	b063	Maximum-limit level of window comparators OI	0. to 100. (lower limit : b064 + b066*2) (%)	100	100	100	○	○
	b064	Minimum-limit level of window comparators OI	0. to 100. (lower limit : b063 - b066*2) (%)	0	0	0	○	○
	b065	Hysteresis width of window comparators OI	0. to 10. (lower limit : b063 - b064 / 2) (%)	0	0	0	○	○
	b066	Maximum-limit level of window comparators OI	-100. to 100. (lower limit : b067 + b068*2) (%)	100	100	100	○	○
	b067	Minimum-limit level of window comparators O/OI/O2	-100. to 100. (lower limit : b066 - b068*2) (%)	-100	-100	-100	○	○
	b068	Hysteresis width of window comparators O/OI/O2	0. to 10. (lower limit : b066 - b067 / 2) (%)	0	0	0	○	○
	b070	Operation level at O disconnection	0 to 100 (%) or "no" (ignore)	255(no)	255(no)	255(no)	×	○
	b071	Operation level at OI disconnection	0 to 100 (%) or "no" (ignore)	255(no)	255(no)	255(no)	×	○
	b072	Operation level at O2 disconnection	0 to 100 (%) or "no" (ignore)	127(no)	127(no)	127(no)	×	○
Others	b078	Cumulative input power data clearance	Clearance by setting "01" and pressing the STR key	00	00	00	○	○
	b079	Cumulative input power display gain setting	1. to 1000.	1.	1.	1.	×	×
	b082	Start frequency adjustment	0.10 to 9.99 (Hz)	0.50	0.50	0.50	×	○
	b083	Carrier frequency setting	0.5 to 15.0 (kHz) (subject to derating)	5.0	5.0	5.0	×	×
	b084	Initialization mode (parameters or trip history)	00 (clearing the trip history), 01 (initializing the data), 02 (clearing the trip history and initializing the data)	00	00	00	×	×
	b085	Country code for initialization	00 (Japan), 01 (EU), 02 (U.S.A.)	01	01	01	×	×
	b086	Frequency scaling conversion factor	0.1 to 99.0	1.0	1.0	1.0	○	○
	b087	STOP key enable	00 (enabling), 01 (disabling), 02 (disabling only the function to stop)	00	00	00	×	○
	b088	Restart mode after FRS	00 (starting with 0 Hz), 01 (starting with matching frequency), 02 (starting with active matching frequency)	00	00	00	×	○
	b089	Automatic carrier frequency reduction	00: invalid, 01: valid	00	00	00	×	×
	b090	Dynamic braking usage ratio	0.0 to 100.0 (%)	0.0	0.0	0.0	×	○
	b091	Stop mode selection	00 (deceleration until stop), 01 (free-run stop)	00	00	00	×	○
	b092	Cooling fan control	00 (always operating the fan), 01 (operating the fan only during inverter operation [including 5 minutes after power-on and power-off])	00	00	00	×	○
	b095	Dynamic braking control	00 (disabling), 01 (enabling [disabling while the motor is topped]), 02 (enabling [enabling also while the motor is topped])	00	00	00	×	○
	b096	Dynamic braking activation level	330 to 380, 660 to 760(V)	360/720	360/720	360/720	×	○
	b098	Thermistor for thermal protection control	00 (disabling the thermistor), 01 (enabling the thermistor with PTC), 02 (enabling the thermistor with NTC)	00	00	00	×	○
	b099	Thermal protection level setting	0. to 9999. (Ω)	3000.	3000.	3000.	×	○
Free setting of V/f characteristic	b100	Free-setting V/f frequency (1)	0. to "free-setting V/f frequency (2)" (Hz)	0.	0.	0.	×	×
	b101	Free-setting V/f voltage (1)	0.0 to 800.0 (V)	0.0	0.0	0.0	×	×
	b102	Free-setting V/f frequency (2)	0. to "free-setting V/f frequency (3)" (Hz)	0.	0.	0.	×	×
	b103	Free-setting V/f voltage (2)	0.0 to 800.0 (V)	0.0	0.0	0.0	×	×
	b104	Free-setting V/f frequency (3)	0. to "free-setting V/f frequency (4)" (Hz)	0.	0.	0.	×	×
	b105	Free-setting V/f voltage (3)	0.0 to 800.0 (V)	0.0	0.0	0.0	×	×
	b106	Free-setting V/f frequency (4)	0. to "free-setting V/f frequency (5)" (Hz)	0.	0.	0.	×	×
	b107	Free-setting V/f voltage (4)	0.0 to 800.0 (V)	0.0	0.0	0.0	×	×
	b108	Free-setting V/f frequency (5)	0. to "free-setting V/f frequency (6)" (Hz)	0.	0.	0.	×	×
	b109	Free-setting V/f voltage (5)	0.0 to 800.0 (V)	0.0	0.0	0.0	×	×
	b110	Free-setting V/f frequency (6)	0. to "free-setting V/f frequency (7)" (Hz)	0.	0.	0.	×	×
	b111	Free-setting V/f voltage (6)	0.0 to 800.0 (V)	0.0	0.0	0.0	×	×
	b112	Free-setting V/f frequency (7)	0.0 to 400.0 (Hz)	0.	0.	0.	×	×
	b113	Free-setting V/f voltage (7)	0.0 to 800.0 (V)	0.0	0.0	0.0	×	×
Others	b120	Brake control enable	00 (disabling), 01 (enabling)	00	00	00	×	○
	b121	Brake wait time for release	0.00 to 5.00 (s)	0.00	0.00	0.00	×	○
	b122	Brake wait time for acceleration	0.00 to 5.00 (s)	0.00	0.00	0.00	×	○
	b123	Brake wait time for stopping	0.00 to 5.00 (s)	0.00	0.00	0.00	×	○
	b124	Brake wait time for confirmation	0.00 to 5.00 (s)	0.00	0.00	0.00	×	○
	b125	Brake release frequency setting	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	b126	Brake release current setting	0.0 to 2.00 x "rated current"	Rated current of inverterx 1..0			×	○
	b127	Braking frequency	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	b130	Overvoltage suppression enable	00 (disabling the restraint), 01 (decelerating and stagnating), 02 (enabling acceleration)	00	00	00	×	○
	b131	Overvoltage suppression level	330 to 390 (V) (200 V class model), 660 to 780 (V) (400 V class model)	380/760	380/760	380/760	×	○
	b132	Acceleration and deceleration rate at overvoltage suppression	0.10 to 30.00 (s)	1.00	1.00	1.00	×	○
	b133	Overvoltage suppression propotional gain	0.00 to 2.55	0.50	0.50	0.50	○	○
	b134	Overvoltage suppression Integral time	0.000 to 9.999 / 10.00 to 63.53 (s)	0.060	0.060	0.060	○	○

●C GROUP: INTELLIGENT TERMINAL FUNCTIONS

[○= Allowed ×= Not permitted]

	Code	Function Name	Monitored data or setting	Default Setting			Setting during operation (allowed or not)	Change during operation (allowed or not)
				-FE(CE)	-FU(UL)	-F(JP)		
Intelligent input terminals	C001	Terminal [1] function (*2)	01 (RV: Reverse RUN), 02 (CF1: Multispeed 1 setting), 03 (CF2: Multispeed 2 setting), 04 (CF3: Multispeed 3 setting), 05 (CF4: Multispeed 4 setting), 06 (JG: Jogging), 07 (DB: external DC braking), 08 (SET: Set 2nd motor data), 09 (2CH: 2-stage acceleration/deceleration), 11 (FRS: free-run stop), 12 (EXT: external trip), 13 (USP: unattended start protection), 14: (CS: commercial power source enable), 15 (SFT: software lock), 16 (AT: analog input voltage/current select), 17 (SET3: 3rd motor control), 18 (RS: reset), 20 (STA: starting by 3-wire input), 21 (STP: stopping by 3-wire input), 22 (F/R: forward/reverse switching by 3-wire input), 23 (PID: PID disable), 24 (PIDC: PID reset), 26 (CAS: control gain setting), 27 (UP: remote control UP function), 28 (DWN: remote control DOWN function), 29 (DWN: remote control data clearing), 31 (OPE: forcible operation), 32 (SF1: multispeed bit 1), 33 (SF2: multispeed bit 2), 34 (SF3: multispeed bit 3), 35 (SF4: multispeed bit 4), 36 (SF5: multispeed bit 5), 37 (SF6: multispeed bit 6), 38 (SF7: multispeed bit 7), 39 (OLR: overload restriction selection), 40 (TL: torque limit enable), 41 (TRQ1: torque limit selection bit 1), 42 (TRQ2: torque limit selection bit 2), 43 (PPI: P/PI mode selection), 44 (BOK: braking confirmation), 45 (ORT: orientation), 46 (LAC: LAD cancellation), 47 (PCLR: clearance of position deviation), 48 (STAT: pulse train position command input enable), 50 (ADD: trigger for frequency addition [A145]), 51 (F-TM: forcible-terminal operation), 52 (ATR: permission of torque command input), 53 (KHC: cumulative power clearance), 54 (SON: servo-on), 55 (FOC: pre-excitation), 56 (MI1: general-purpose input 1), 57 (MI2: general-purpose input 2), 58 (MI3: general-purpose input 3), 59 (MI4: general-purpose input 4), 60 (MI5: general-purpose input 5), 61 (MI6: general-purpose input 6), 62 (MI7: general-purpose input 7), 63 (MI8: general-purpose input 8), 65 (AHD: analog command holding), 66 (CP1: multistage position settings selection 1), 67 (CP2: multistage position settings selection 2), 68 (CP3: multistage position settings selection 3), 69 (ORL: Zero-return limit function), 70 (ORG: Zero-return trigger function), 71 (FOT: forward drive stop), 72 (ROT: reverse drive stop), 73 (SPD: speed / position switching), 74 (PCNT: pulse counter), 75 (PCC: pulse counter clear), no (NO: no assignment)	18(RS)	18(RS)	18(RS)	×	○
	C002	Terminal [2] function		16(AT)	16(AT)	16(AT)	×	○
	C003	Terminal [3] function (*2)		06(JG)	06(JG)	06(JG)	×	○
	C004	Terminal [4] function		11(FRS)	11(FRS)	11(FRS)	×	○
	C005	Terminal [5] function		09(2CH)	09(2CH)	09(2CH)	×	○
	C006	Terminal [6] function		03(CF2)	13(USP)	03(CF2)	×	○
	C007	Terminal [7] function		02(CF1)	02(CF1)	02(CF1)	×	○
	C008	Terminal [8] function		01(RV)	01(RV)	01(RV)	×	○

*2 When the emergency stop function is enabled (SW1 = ON), "18" (RS) and "64" (EMR) are forcibly written to parameters "C001" and "C003", respectively. (You cannot arbitrarily write "64" to "C001".) If the SW1 signal is turned off and then turned on, "no" (no assignment) is set in parameter "C003".

[○= Allowed ×= Not permitted]

	Code	Function Name	Monitored data or setting	Default Setting -FE(CE)	-FU(UL)	-F(JP)	Setting during operation (allowed or not)	Change during operation (allowed or not)
Intelligent input terminals	C011	Terminal (1) active state	00(NO) / 01(NC)	00	00	00	×	○
	C012	Terminal (2) active state	00(NO) / 01(NC)	00	00	00	×	○
	C013	Terminal (3) active state	00(NO) / 01(NC)	00	00	00	×	○
	C014	Terminal (4) active state	00(NO) / 01(NC)	00	00	00	×	○
	C015	Terminal (5) active state	00(NO) / 01(NC)	00	00	00	×	○
	C016	Terminal (6) active state	00(NO) / 01(NC)	00	01	00	×	○
	C017	Terminal (7) active state	00(NO) / 01(NC)	00	00	00	×	○
	C018	Terminal (8) active state	00(NO) / 01(NC)	00	00	00	×	○
	C019	Terminal FW active state	00(NO) / 01(NC)	00	00	00	×	○
Intelligent output terminals	C021	Terminal (11) function	00 (RUN: running), 01 (FA1: constant-speed reached), 02 (FA2: set frequency overreached), 03 (OL: overload notice advance signal (1)), 04 (OD: output deviation for PID control), 05 (AL: alarm signal), 06 (FA3: set frequency reached), 07 (OTQ: over-torque), 08 (IP: instantaneous power failure), 09 (UV: undervoltage), 10 (TRQ: torque limited), 11 (RNT: operation time over), 12 (ONT: plug-in time over), 13 (THM: thermal alarm signal), 19 (BRK: brake release), 20 (BER: braking error), 21 (ZS: 0 Hz detection signal), 22 (DSE: speed deviation maximum), 23 (POK: positioning completed), 24 (FA4: set frequency overreached 2), 25 (FA5: set frequency reached 2), 26 (OL2: overload notice advance signal (2)), 27 (Odc: Analog O disconnection detection), 28 (OIDc: Analog OI disconnection detection), 29 (O2Dc: Analog O2 disconnection detection), 31 (FBV: PID feedback comparison), 32 (NDc: communication line disconnection), 33 (LOG1: logical operation result 1), 34 (LOG2: logical operation result 2), 35 (LOG3: logical operation result 3), 36 (LOG4: logical operation result 4), 37 (LOG5: logical operation result 5), 38 (LOG6: logical operation result 6), 39 (WAC: capacitor life warning), 40 (WAF: cooling-fan speed drop), 41 (FR: starting contact signal), 42 (OHF: heat sink overheat warning), 43 (LOC: low-current indication signal), 44 (M01: general-purpose output 1), 45 (M02: general-purpose output 2), 46 (M03: general-purpose output 3), 47 (M04: general-purpose output 4), 48 (M05: general-purpose output 5), 49 (M06: general-purpose output 6), 50 (IRDY: inverter ready), 51 (FWR: forward rotation), 52 (RVR: reverse rotation), 53 (MJA: major failure), 54(WCO: window comparator O), 55(WCOI: window comparator OI), 56 (WCO2: window comparator O2) (When alarm code output is selected for "C062", functions "AC0" to "AC2" or "AC0" to "AC3" [ACn: alarm code output] are forcibly assigned to intelligent output terminals 11 to 13 or 11 to 14, respectively.)	01(FA1)	01(FA1)	01(FA1)	×	○
	C022	Terminal (12) function		00(RUN)	00(RUN)	00(RUN)	×	○
	C023	Terminal (13) function		03(OL)	03(OL)	03(OL)	×	○
	C024	Terminal (14) function		07(OTO)	07(OTO)	07(OTO)	×	○
	C025	Terminal (15) function		40(WAF)	40(WAF)	40(WAF)	×	○
	C026	Alarm relay terminal function		05(AL)	05(AL)	05(AL)	×	○
Analog monitoring	C027	FM signal selection	00 (output frequency), 01 (output current), 02 (output torque), 03 (digital output frequency), 04 (output voltage), 05 (input power), 06 (electronic thermal overload), 07 (LAD frequency), 08 (digital current monitoring), 09 (motor temperature), 10 (heat sink temperature), 12 (general-purpose output YA0)	00	00	00	×	○
	C028	AM signal selection	00 (output frequency), 01 (output current), 02 (output torque), 04 (output voltage), 05 (input power), 06 (electronic thermal overload), 07 (LAD frequency), 09 (motor temperature), 10 (heat sink temperature), 11 (output torque [signed value]), 13 (general-purpose output YA1)	00	00	00	×	○
	C029	AMI signal selection	00 (output frequency), 01 (output current), 02 (output torque), 04 (output voltage), 05 (input power), 06 (electronic thermal overload), 07 (LAD frequency), 09 (motor temperature), 10 (heat sink temperature), 14 (general-purpose output YA2)	00	00	00	×	○
	C030	Digital current monitor reference value	0.20 x "rated current" to 2.00 x "rated current" (A) (Current with digital current monitor output at 1,440 Hz)	Rated current of inverterx 1..0			○	○
Intelligent output terminals	C031	Terminal (11) active state	00(NO) / 01(NC)	00	00	00	×	○
	C032	Terminal (12) active state	00(NO) / 01(NC)	00	00	00	×	○
	C033	Terminal (13) active state	00(NO) / 01(NC)	00	00	00	×	○
	C034	Terminal (14) active state	00(NO) / 01(NC)	00	00	00	×	○
	C035	Terminal (15) active state	00(NO) / 01(NC)	00	00	00	×	○
	C036	Alarm relay terminal active state	00(NO) / 01(NC)	01	01	01	×	○
Levels and output terminal status	C038	Low-current indication signal output mode selection	00 (output during acceleration/deceleration and constant-speed operation), 01 (output only during constant-speed operation)	01	01	01	×	○
	C039	Low-current indication signal detection level	0.0 to 2.00 x "rated current" (A)	Rated current of inverterx 1..0			×	○
	C040	Overload signal output mode	00 (output during acceleration/deceleration and constant-speed operation), 01 (output only during constant-speed operation)	01	01	01	×	○
	C041	Overload level setting	0.0 to 2.00 x "rated current" (A)	Rated current of inverterx 1..0			×	○
	C042	Frequency arrival setting for accel.	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	C043	Frequency arrival setting for decel.	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	C044	PID deviation level setting	0.0 to 100.0 (%)	3.0	3.0	3.0	×	○
	C045	Frequency arrival setting for acceleration (2)	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	C046	Frequency arrival setting for deceleration (2)	0.00 to 99.99, 100.0 to 400.0 (Hz)	0.00	0.00	0.00	×	○
	C052	Maximum PID feedback data	0.0 to 100.0 (%)	100.0	100.0	100.0	×	○
	C053	Minimum PID feedback data	0.0 to 100.0 (%)	0.0	0.0	0.0	×	○
	C055	Over-torque(Forward-driving) level setting	0. to 200. (%)	100.	100.	100.	×	○
	C056	Over-torque(Reverse-regenerating) level setting	0. to 200. (%)	100.	100.	100.	×	○
	C057	Over-torque(Reverse-driving) level setting	0. to 200. (%)	100.	100.	100.	×	○
	C058	Over-torque(Forward-regenerating) level setting	0. to 200. (%)	100.	100.	100.	×	○
	C061	Electronic thermal warning level setting	0. to 100. (%)	80.	80.	80.	×	○
	C062	Alarm code input	00(Disabled) / 01(3-bit) / 02(4-bit)	00	00	00	×	○
	C063	Zero speed detection level	0.00 to 99.99, 100.0 (Hz)	0,00	0,00	0,00	×	○
	C064	Heat sink overheat warning level	0. to 200.0 (℃)	120.	120.	120.	×	○
Communication function	C071	Communication speed selection	02 (loopback test), 03 (2,400 bps), 04 (4,800 bps), 05 (9,600 bps), 06 (19,200 bps)	04	04	04	×	○
	C072	Node allocation	1. to 32.	1.	1.	1.	×	○
	C073	Communication data length selection	7 (7 bits), 8 (8 bits)	7	7	7	×	○
	C074	Communication parity selection	00 (no parity), 01 (even parity), 02 (odd parity)	00	00	00	×	○
	C075	Communication stop bit selection	1 (1 bit), 2 (2 bits)	1	1	1	×	○
	C076	Selection of the operation after communication error	00 (tripping), 01 (tripping after decelerating and stopping the motor), 02 (ignoring errors), 03 (stopping the motor after free-running), 04 (decelerating and stopping the motor)	02	02	02	×	○
	C077	Communication timeout limit before tripping	0.00 to 99.99 (s)	0.00	0.00	0.00	×	○
	C078	Communication wait time	0. to 1000. (ms)	0.	0.	0.	×	○
	C079	Communication mode selection	00(ASCII), 01(Modbus-RTU)	00	00	00	×	○
Adjustment	C081	O input span calibration	0. to 9999., 1000 to 6553(10000 to 65530)	Factory set			×	○
	C082	OI input span calibration	0. to 9999., 1000 to 6553(10000～65530)				×	○
	C083	O2 input span calibration	0. to 9999., 1000 to 6553(10000～65530)				×	○
	C085	Thermistor input tuning	0.0 to 999.9, 1000.				×	○
	C091	Debug mode enable	(Do not change this parameter, which is intended for factory adjustment.)	00	00	00	×	×
Others	C101	UP/DOWN memory mode selection	00 (not storing the frequency data), 01 (storing the frequency data)	00	00	00	×	○
	C102	Reset mode selection	00 (resetting the trip when RS is on), 01 (resetting the trip when RS is off), 02 (enabling resetting only upon tripping [resetting when RS is on])	00	00	00	○	○
	C103	Restart mode after reset	00 (starting with 0 Hz), 01 (starting with matching frequency), 02 (restarting with active matching frequency)	00	00	00	×	○
Meter adjustment	C105	FM gain adjustment	50. to 200. (%)	100.	100.	100.	○	○
	C106	AM gain adjustment	50. to 200. (%)	100.	100.	100.	○	○

[○= Allowed ×= Not permitted]

	Code	Function Name	Monitored data or setting	Default Setting			Setting during operation (allowed or not)	Change during operation (allowed or not)
				-FE(CE)	-FU(UL)	-F(JP)		
Meter adjustment	C107	AMI gain adjustment	50. to 200. (%)	100.	100.	100.	○	○
	C109	AM bias adjustment	0. to 100. (%)	0.	0.	0.	○	○
	C110	AMI bias adjustment	0. to 100. (%)	20.	20.	20.	○	○
Terminal	C111	Overload setting (2)	0.0 to 2.00 x "rated current" (A)	Rated current of inverterx 1..0			×	○
Adjustment	C121	O input zero calibration	0. to 9999., 1000 to 6553 (10000 to 65530)	Factory set			○	○
	C122	OI input zero calibration	0. to 9999., 1000 to 6553 (10000 to 65530)				○	○
	C123	O2 input zero calibration	0. to 9999., 1000 to 6553 (10000 to 65530)				○	○
Output terminal operation function	C130	Output 11 on-delay time	0.0 to 100.0 (s)	0.0	0.0	0.0	○	○
	C131	Output 11 off-delay time	0.0 to 100.0 (s)	0.0	0.0	0.0	×	○
	C132	Output 12 on-delay time	0.0 to 100.0 (s)	0.0	0.0	0.0	×	○
	C133	Output 12 off-delay time	0.0 to 100.0 (s)	0.0	0.0	0.0	×	○
	C134	Output 13 on-delay time	0.0 to 100.0 (s)	0.0	0.0	0.0	×	○
	C135	Output 13 off-delay time	0.0 to 100.0 (s)	0.0	0.0	0.0	×	○
	C136	Output 14 on-delay time	0.0 to 100.0 (s)	0.0	0.0	0.0	×	○
	C137	Output 14 off-delay time	0.0 to 100.0 (s)	0.0	0.0	0.0	×	○
	C138	Output 15 on-delay time	0.0 to 100.0 (s)	0.0	0.0	0.0	×	○
	C139	Output 15 off-delay time	0.0 to 100.0 (s)	0.0	0.0	0.0	×	○
	C140	Output RY on-delay time	0.0 to 100.0 (s)	0.0	0.0	0.0	×	○
	C141	Output RY off-delay time	0.0 to 100.0 (s)	0.0	0.0	0.0	×	○
	C142	Logical output signal 1 selection 1	Same as the settings of C021 to C026 (except those of LOG1 to LOG6)	00	00	00	×	○
	C143	Logical output signal 1 selection 2	Same as the settings of C021 to C026 (except those of LOG1 to LOG6)	00	00	00	×	○
	C144	Logical output signal 1 operator selection	00 (AND), 01 (OR), 02 (XOR)	00	00	00	×	○
	C145	Logical output signal 2 selection 1	Same as the settings of C021 to C026 (except those of LOG1 to LOG6)	00	00	00	×	○
	C146	Logical output signal 2 selection 2	Same as the settings of C021 to C026 (except those of LOG1 to LOG6)	00	00	00	×	○
	C147	Logical output signal 2 operator selection	00 (AND), 01 (OR), 02 (XOR)	00	00	00	×	○
	C148	Logical output signal 3 selection 1	Same as the settings of C021 to C026 (except those of LOG1 to LOG6)	00	00	00	×	○
	C149	Logical output signal 3 selection 2	Same as the settings of C021 to C026 (except those of LOG1 to LOG6)	00	00	00	×	○
	C150	Logical output signal 3 operator selection	00 (AND), 01 (OR), 02 (XOR)	00	00	00	×	○
	C151	Logical output signal 4 selection 1	Same as the settings of C021 to C026 (except those of LOG1 to LOG6)	00	00	00	×	○
	C152	Logical output signal 4 selection 2	Same as the settings of C021 to C026 (except those of LOG1 to LOG6)	00	00	00	×	○
	C153	Logical output signal 4 operator selection	00 (AND), 01 (OR), 02 (XOR)	00	00	00	×	○
	C154	Logical output signal 5 selection 1	Same as the settings of C021 to C026 (except those of LOG1 to LOG6)	00	00	00	×	○
	C155	Logical output signal 5 selection 2	Same as the settings of C021 to C026 (except those of LOG1 to LOG6)	00	00	00	×	○
	C156	Logical output signal 5 operator selection	00 (AND), 01 (OR), 02 (XOR)	00	00	00	×	○
	C157	Logical output signal 6 selection 1	Same as the settings of C021 to C026 (except those of LOG1 to LOG6)	00	00	00	×	○
	C158	Logical output signal 6 selection 2	Same as the settings of C021 to C026 (except those of LOG1 to LOG6)	00	00	00	×	○
	C159	Logical output signal 6 operator selection	00 (AND), 01 (OR), 02 (XOR)	00	00	00	×	○
Input terminal response	C160	Input terminal response time setting 1	0. to 200. (×2ms)	1	1	1	×	○
	C161	Input terminal response time setting 2	0. to 200. (×2ms)	1	1	1	×	○
	C162	Input terminal response time setting 3	0. to 200. (×2ms)	1	1	1	×	○
	C163	Input terminal response time setting 4	0. to 200. (×2ms)	1	1	1	×	○
	C164	Input terminal response time setting 5	0. to 200. (×2ms)	1	1	1	×	○
	C165	Input terminal response time setting 6	0. to 200. (×2ms)	1	1	1	×	○
	C166	Input terminal response time setting 7	0. to 200. (×2ms)	1	1	1	×	○
	C167	Input terminal response time setting 8	0. to 200. (×2ms)	1	1	1	×	○
	C168	Input terminal response time setting FW	0. to 200. (×2ms)	1	1	1	×	○
other	C169	Multistage speed/position determination time	0. to 200. (×10ms)	0	0	0	×	○

●H GROUP: MOTOR CONSTANTS FUNCTIONS

[○= Allowed ×= Not permitted]

	Code	Function Name	Monitored data or setting	Default Setting			Setting during operation (allowed or not)	Change during operation (allowed or not)
				-FE(CE)	-FU(UL)	-F(JP)		
Control constants	H001	Auto-tuning Setting	00 (disabling auto-tuning), 01 (auto-tuning without rotation), 02 (auto-tuning with rotation)	00	00	00	×	×
	H002	Motor data selection, 1st motor	00 (Hitachi standard data), 01 (auto-tuned data), 02 (auto-tuned data [with online auto-tuning function])	00	00	00	×	×
	H202	Motor data selection, 2nd motor	00 (Hitachi standard data), 01 (auto-tuned data), 02 (auto-tuned data [with online auto-tuning function])	00	00	00	×	×
	H003	Motor capacity, 1st motor	0.20 to 75.00 (kW)	Factory set			×	×
	H203	Motor capacity, 2nd motor	0.20 to 75.00 (kW)				×	×
	H004	Motor poles setting, 1st motor	2, 4, 6, 8, 10 (poles)	4	4	4	×	×
	H204	Motor poles setting, 2nd motor	2, 4, 6, 8, 10 (poles)	4	4	4	×	×
	H005	Motor speed constant, 1st motor	0.001 to 9.999, 10.00 to 80.00 (10.000 to 80.000)	1,590	1,590	1,590	○	○
	H205	Motor speed constant, 2nd motor	0.001 to 9.999, 10.00 to 80.00 (10.000 to 80.000)	1,590	1,590	1,590	○	○
	H006	Motor stabilization constant, 1st motor	0. to 255.	100.	100.	100.	○	○
	H206	Motor stabilization constant, 2nd motor	0. to 255.	100.	100.	100.	○	○
	H306	Motor stabilization constant, 3rd motor	0. to 255.	100.	100.	100.	○	○
	H020	Motor constant R1, 1st motor	0.001 to 9.999, 10.00 to 65.53 (Ω)	Depending on motor capacity			×	×
	H220	Motor constant R1, 2nd motor	0.001 to 9.999, 10.00 to 65.53 (Ω)				×	×
	H021	Motor constant R2, 1st motor	0.001 to 9.999, 10.00 to 65.53 (Ω)				×	×
	H221	Motor constant R2, 2nd motor	0.001 to 9.999, 10.00 to 65.53 (Ω)				×	×
	H022	Motor constant L, 1st motor	0.01 to 99.99, 100.0 to 655.3 (mH)				×	×
	H222	Motor constant L, 2nd motor	0.01 to 99.99, 100.0 to 655.3 (mH)				×	×
	H023	Motor constant Io	0.01 to 99.99, 100.0 to 655.3 (A)				×	×
	H223	Motor constant Io, 2nd motor	0.01 to 99.99, 100.0 to 655.3 (A)				×	×
	H024	Motor constant J	0.001 to 9.999, 10.00 to 99.99, 100.0 to 999.9, 1000. to 9999.				×	×
	H224	Motor constant J, 2nd motor	0.001 to 9.999, 10.00 to 99.99, 100.0 to 999.9, 1000. to 9999.				×	×
	H030	Auto constant R1, 1st motor	0.001 to 9.999, 10.00 to 65.53 (Ω)				×	×
	H230	Auto constant R1, 2nd motor	0.001 to 9.999, 10.00 to 65.53 (Ω)				×	×
	H031	Auto constant R2, 1st motor	0.001 to 9.999, 10.00 to 65.53 (Ω)				×	×
	H231	Auto constant R2, 2nd motor	0.001 to 9.999, 10.00 to 65.53 (Ω)				×	×
	H032	Auto constant L, 1st motor	0.01 to 99.99, 100.0 to 655.3 (mH)				×	×
	H232	Auto constant L, 2nd motor	0.01 to 99.99, 100.0 to 655.3 (mH)				×	×
	H033	Auto constant Io, 1st motor	0.01 to 99.99, 100.0 to 655.3 (A)				×	×
	H233	Auto constant Io, 2nd motor	0.01 to 99.99, 100.0 to 655.3 (A)				×	×

[○= Allowed ×= Not permitted]

Code		Function Name	Monitored data or setting	Default Setting			Setting during operation (allowed or not)	Change during operation (allowed or not)
				-FE(CE)	-FU(UL)	-F(JP)		
Control constants	H034	Auto constant J, 1st motor	0.001 to 9.999, 10.00 to 99.99, 100.0 to 999.9, 1000. to 9999.	Depending on motor capacity			×	×
	H234	Auto constant J, 2nd motor	0.001 to 9.999, 10.00 to 99.99, 100.0 to 999.9, 1000. to 9999.				×	×
Control constants	H050	PI proportional gain for 1st motor	0.0 to 999.9, 1000.	100.0	100.0	100.0	○	○
	H250	PI proportional gain for 2nd motor	0.0 to 999.9, 1000.	100.0	100.0	100.0	○	○
	H051	PI integral gain for 1st motor	0.0 to 999.9, 1000.	100.0	100.0	100.0	○	○
	H251	PI integral gain for 2nd motor	0.0 to 999.9, 1000.	100.0	100.0	100.0	○	○
	H052	P proportional gain setting for 1st motor	0.01 to 10.00	1.00	1.00	1.00	○	○
	H252	P proportional gain setting for 2nd motor	0.01 to 10.00	1.00	1.00	1.00	○	○
	H060	Zero LV lmit for 1st motor	0.0 to 100.0	100.	100.	100.	○	○
	H260	Zero LV lmit for 2nd motor	0.0 to 100.0	100.	100.	100.	○	○
	H061	Zero LV starting boost current for 1st motor	0. to 50. (%)	50.	50.	50.	○	○
	H261	Zero LV starting boost current for 2nd motor	0. to 50. (%)	50.	50.	50.	○	○
	H070	Terminal selection PI proportional gain setting	0.0 to 999.9, 1000.	100.0	100.0	100.0	○	○
	H071	Terminal selection PI integral gain setting	0.0 to 999.9, 1000.	100.0	100.0	100.0	○	○
	H072	Terminal selection P proportional gain setting	0.00 to 10.00	1.00	1.00	1.00	○	○
	H073	Gain switching time	0. to 9999. (ms)	100.	100.	100.	○	○

●P GROUP: EXPANSION CARD FUNCTIONS

[○= Allowed ×= Not permitted]

Code		Function Name	Monitored data or setting	Default Setting			Setting during operation (allowed or not)	Change during operation (allowed or not)
				-FE(CE)	-FU(UL)	-F(JP)		
Output terminal operation function	P001	Operation mode on expansion card 1 error	00 (tripping), 01 (continuing operation)	00	00	00	×	○
	P002	Operation mode on expansion card 2 error	00 (tripping), 01 (continuing operation)	00	00	00	×	○
	P011	Encoder pulse-per-revolution (PPR) setting	128. to 9999., 1000 to 6500 (10000 to 65000) (pulses)	1024	1024	1024	×	×
	P012	Control pulse setting	00 (ASR), 01 (APR), 02 (APR2), 03 (HAPR)	00	00	00	×	×
	P013	Pulse input mode setting	00 (mode 0), 01 (mode 1), 02 (mode 2)	00	00	00	×	×
	P014	Home search stop position setting	0. to 4095.	0.	0.	0.	×	○
	P015	Home search speed setting	"start frequency" to "maximum frequency" (up to 120.0) (Hz)	5.00	5.00	5.00	×	○
	P016	Home search direction setting	00 (forward), 01 (reverse)	00	00	00	×	×
	P017	Home search completion range setting	0. to 9999., 1000 (10000) (pulses)	5.	5.	5.	×	○
	P018	Home search completion delay time setting	0.00 to 9.99 (s)	0.00	0.00	0.00	×	○
	P019	Electronic gear set position selection	00 (feedback side), 01 (commanding side)	00	00	00	×	○
	P020	Electronic gear ratio numerator setting	0. to 9999.	1.	1.	1.	×	○
	P021	Electronic gear ratio denominator setting	0. to 9999.	1.	1.	1.	×	×
	P022	Feed-forward gain setting	0.00 to 99.99, 100.0 to 655.3	0.00	0.00	0.00	×	○
	P023	Position loop gain setting	0.00 to 99.99, 100.0	0.50	0.50	0.50	×	○
	P024	Position bias setting	-204 (-2048.) / -999. to 2048	0.	0.	0.	×	○
	P025	Temperature compensation thermistor enable	00 (no compensation), 01 (compensation)	00	00	00	×	○
	P026	Over-speed error detection level setting	0.0 to 150.0 (%)	135.0	135.0	135.0	×	○
	P027	Speed deviation error detection level setting	0.00 to 99.99, 100.0 to120.0 (Hz)	7.50	7.50	7.50	×	×
	P028	Numerator of motor gear ratio	0. to 9999.	1.	1.	1.	×	○
	P029	Denominator of motor gear ratio	0. to 9999.	1.	1.	1.	×	○
	P031	Accel./decel. time input selection	00 (digital operator), 01 (option 1), 02 (option 2), 03 (easy sequence)	00	00	00	×	×
	P032	Positioning command input selection	00 (digital operator), 01 (option 1), 02 (option 2)	00	00	00	×	○
	P033	Torque command input selection	00 (O terminal), 01 (OI terminal), 02 (O2 terminal), 03 (digital operator)	00	00	00	×	×
	P034	Torque command setting	0. to 200. (%)	0.	0.	0.	○	○
	P035	Polarity selection at the torque command input via O2 terminal	00 (as indicated by the sign), 01 (depending on the operation direction)	00	00	00	×	×
	P036	Torque bias mode	00 (disabling the mode), 01 (digital operator), 02 (input via O2 terminal)	00	00	00	×	×
	P037	Torque bias value	-200. to +200. (%)	0.	0.	0.	○	○
	P038	Torque bias polarity selection	00 (as indicated by the sign), 01 (depending on the operation direction)	00	00	00	×	×
	P039	Speed limit for torque-controlled operation (forward rotation)	0.00 to "maximum frequency" (Hz)	0.00	0.00	0.00	○	○
	P040	Speed limit for torque-controlled operation (reverse rotation)	0.00 to "maximum frequency" (Hz)	0.00	0.00	0.00	○	○
	P044	DeviceNet comm watchdog timer	0.00 to 99.99 (s)	1.00	1.00	1.00	×	×
	P045	Inverter action on DeviceNet comm error	00 (tripping), 01 (tripping after decelerating and stopping the motor), 02 (ignoring errors), 03 (stopping the motor after free-running), 04 (decelerating and stopping the motor)	01	01	01	×	×
	P046	DeviceNet polled I/O : Output instance number	20, 21, 100	21	21	21	×	×
	P047	DeviceNet polled I/O : input instance number	70, 71, 101	71	71	71	×	×
	P048	Inverter action on DeviceNet idle mode	00 (tripping), 01 (tripping after decelerating and stopping the motor), 02 (ignoring errors), 03 (stopping the motor after free-running), 04 (decelerating and stopping the motor)	01	01	01	×	×
	P049	DeviceNet motor poles setting for RPM	0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38 (poles)	00	00	00	×	×
	P055	Pulse-string frequency scale	1.0 to 50.0 (kHz)	25.0	25.0	25.0	×	○
	P056	Time constant of pulse-string frequency filter	0.01 to 2.00 (s)	0.10	0.10	0.10	×	○
	P057	Pulse-string frequency bias	-100. to +100. (%)	0.	0.	0.	×	○
	P058	Pulse-string frequency limit	0. to 100. (%)	100.	100.	100.	×	○
Absolute position control	P060 — P067	Multistage position setting 0-7	Position setting range reverse side – forward side (upper 4 digits including "-")	0	0	0	○	○
	P068	Zero-return mode selection	00(Low) / 01 (Hi1) / 00 (Hi2)	00	00	00	○	○
	P069	Zero-return direction selection	00 (FW) / 01 (RV)	00	00	00	○	○
	P070	Low-speed zero-return frequency	0.00 – 10.00 (Hz)	0.00	0.00	0.00	○	○
	P071	High-speed zero-return frequency	0.00 – 99.99 / 100.0 – Maximum frequency setting, 1st motor (Hz)	0.00	0.00	0.00	○	○
	P072	Position range specification (forward)	0 – 268435455 (when P012 = 02) 0 – 1073741823 (When P012 = 03) (upper 4 digits)	268435455			○	○
	P073	Position range specification (reverse)	-268435455 – 0 (when P012 = 02) -1073741823 - 0 (When P012 = 03) (upper 4 digits)	-268435455			○	○
	P074	Teaching selection	00 (X00) / 01 (X01) / 02 (X02) / 03 (X03) /04 (X04) / 05 (X05) / 06 (X06) / 07 (X07)	00	00	00	○	○
sequence	P100 — P131	Easy sequence user parameter U (00)-(31)	0. to 9999., 1000 to 6553 (10000 to 65535)	0.	0.	0.	○	○

●U GROUP: USER-SELECTABLE MENU FUNCTIONS

[○= Allowed ×= Not permitted]

Code		Function Name	Monitored data or setting	Default Setting			Setting during operation (allowed or not)	Change during operation (allowed or not)
				-FE(CE)	-FU(UL)	-F(JP)		
parameters	U001 — P012	User selected functions 1-12	no/d001 to P131	no	no	no	○	○

PROTECTIVE FUNCTIONS

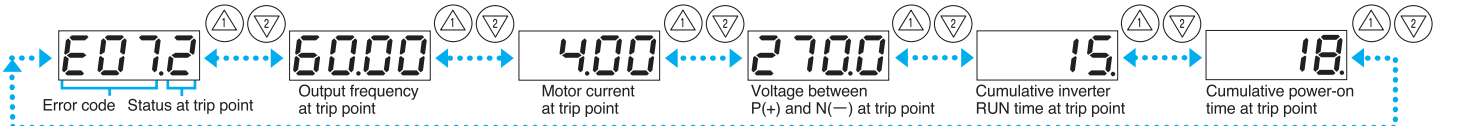
Name	Cause(s)		Display on digital operator	Display on remote operator/copy unit ERR1****
Over-current protection	The inverter output was short-circuited, or the motor shaft is locked or has a heavy load. These conditions cause excessive current for the inverter, so the inverter output is turned off.	While at constant speed	E01	OC.Drive
		During deceleration	E02	OC.Decel
		During acceleration	E03	OC.Accel
		Others	E04	Over.C
Overload protection(*1)	When a motor overload is detected by the electronic thermal function, the inverter trips and turns off its output.		E05	Over.L
Braking resistor overload protection	When the regenerative braking resistor exceeds the usage time allowance or an over-voltage caused by the stop of the BRD function is detected, the inverter trips and turns off its output.		E06	OL.BRD
Over-voltage protection	When the DC bus voltage exceeds a threshold, due to regenerative energy from the motor, the inverter trips and turns off its output.		E07	Over.V
EEPROM error(*2)	When the built-in EEPROM memory has problems due to noise or excessive temperature, the inverter trips and turns off its output.		E08	EEPROM
Under-voltage error	A decrease of internal DC bus voltage below a threshold results in a control circuit fault. This condition can also generate excessive motor heat or cause low torque. The inverter trips and turns off its output.		E09	Under.V
CT(Current transformer) error	If a strong source of electrical interference is close to the inverter or abnormal operations occur in the built-in CT, the inverter trips and turns off its output.		E10	CT
CPU error	When a malfunction in the built-in CPU has occurred, the inverter trips and turns off its output.		E11	CPU
External trip	When a signal to an intelligent input terminal configured as EXT has occurred, the inverter trips and turns off its output.		E12	EXTERNAL
USP error	An error occurs when power is cycled while the inverter is in RUN mode if the Unattended Start Protection (USP) is enabled. The inverter trips and does not go into RUN mode until the error is cleared.		E13	USP
Ground fault	The inverter is protected by the detection of ground faults between the inverter output and the motor during power-up tests. This feature protects the inverter only.		E14	GND.Flt.
Input over-voltage protection	When the input voltage is higher than the specified value, it is detected 60 seconds after power-up and the inverter trips and turns of its output.		E15	OV.SRC
Instantaneous power failure	When power is cut for more than 15ms, the inverter trips and turns off its output. If power failure continues, the error will be cleared. The inverter restarts if it is in RUN mode when power is cycled.		E16	Inst.P-F
Temperature error due to low cooling-fan speed	The inverter will display the error code shown on the right if the lowering of cooling-fan speed is detected at the occurrence of the temperature error described below.		E20	OH.stFAN
Inverter thermal trip	When the inverter internal temperature is higher than the specified value, the thermal sensor in the inverter module detects the higher temperature of the power devices and trips, turning off the inverter output.		E21	OH FIN
Gate array error	Communication error has occurred between CPU and gate array.		E23	GA
Phase loss detection	One of three lines of 3-phase power supply is missing.		E24	PH.Fail
Main circuit error (*3)	The inverter will trip if the gate array cannot confirm the on/off state of IGBT because of a malfunction due to noise or damage to the main circuit element.		E25	Main.Cir
IGBT error	When an instantaneous over-current has occurred, the inverter trips and turns off its output to protect main circuit element.		E30	IGBT
Thermistor error	When the thermistor inside the motor detects temperature higher than the specified value, the inverter trips and turns off its output.		E35	TH
Braking error	The inverter turns off its output when it can not detect whether the braking is ON or OFF within waiting time set at b024 after it has released the brake. (When braking is enabled at b120)		E36	BRAKE
Emergency stop (*4)	If the EMR signal (on three terminals) is turned on when the slide switch (SW1) on the logic board is set to ON, the inverter hardware will shut off the inverter output and display the error code shown on the right.		E37	EMR
Low-speed overload protection	If overload occurs during the motor operation at a very low speed at 0.2 Hz or less, the electronic thermal protection circuit in the inverter will detect the overload and shut off the inverter output. (2nd electronic thermal control) (Note that a high frequency may be recorded as the error history data.)		E38	OL-LowSP
Modbus communication error	If timeout occurs because of line disconnection during the communication in Modbus-RTU mode, the inverter will display the error code shown on the right. (The inverter will trip according to the setting of "C076".)		E41	NET.ERR
Out of operation due to under-voltage	Due to insufficient voltage, the inverter has turned off its output and been trying to restart. If it fails to restart, it goes into the under-voltage error.		----	UV.WAIT
Easy sequence function Error	Error indications by protective functions with the easy sequence function used.		E43	PRG.CMD
			E44	PRG.NST
			E45	PRG.ERR1
Expansion card 1 connection error	An error has been detected in an expansion card or at its connecting terminals.		E60~E69	OP1-0~OP1-9
Expansion card 2 connection error			E70~E79	OP2-0~OP2-9

*1: Reset operation is acceptable 10 seconds after the trip.
*2: Check the parameters when EEPROM error occurs.
*3: The inverter will not accept reset commands input via the RS terminal or entered by the STOP/RESET key. Therefore, turn off the inverter power.
*4: The inverter will not accept the reset command entered from the digital operator. Therefore, reset the inverter by turning on the RS terminal.

〈Status Display〉

Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
0	Reset	2	Deceleration	4	Acceleration	6	Starting	8	Overload Restriction
1	Stop	3	Constant Speed	5	f0 Stop	7	DB	9	Forcible or servo-on

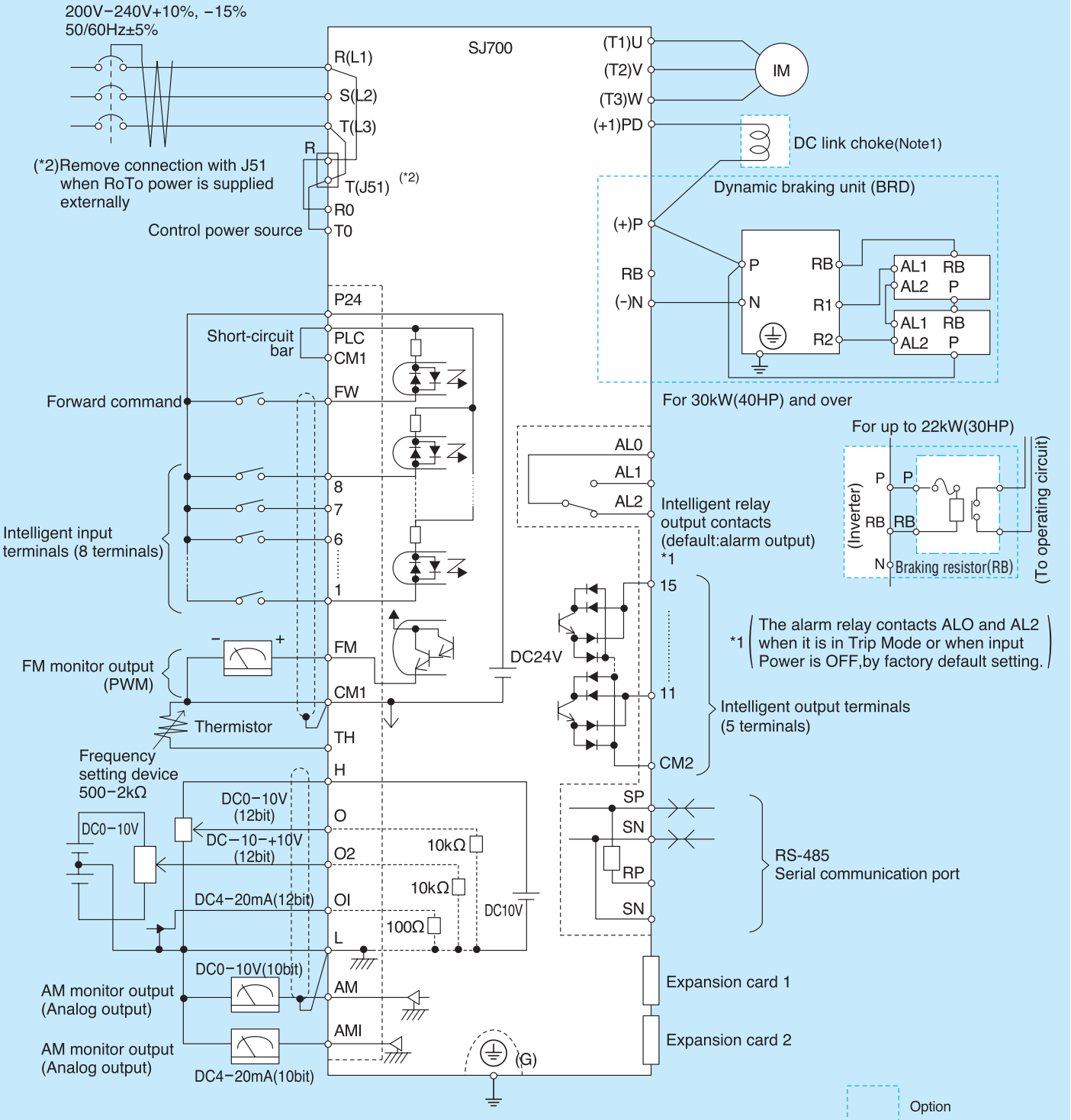
〈How to access the details about the present fault〉



CONNECTING DIAGRAM

● Source type logic

In case of 400V class, place a transformer for operating circuit to receive 200V.



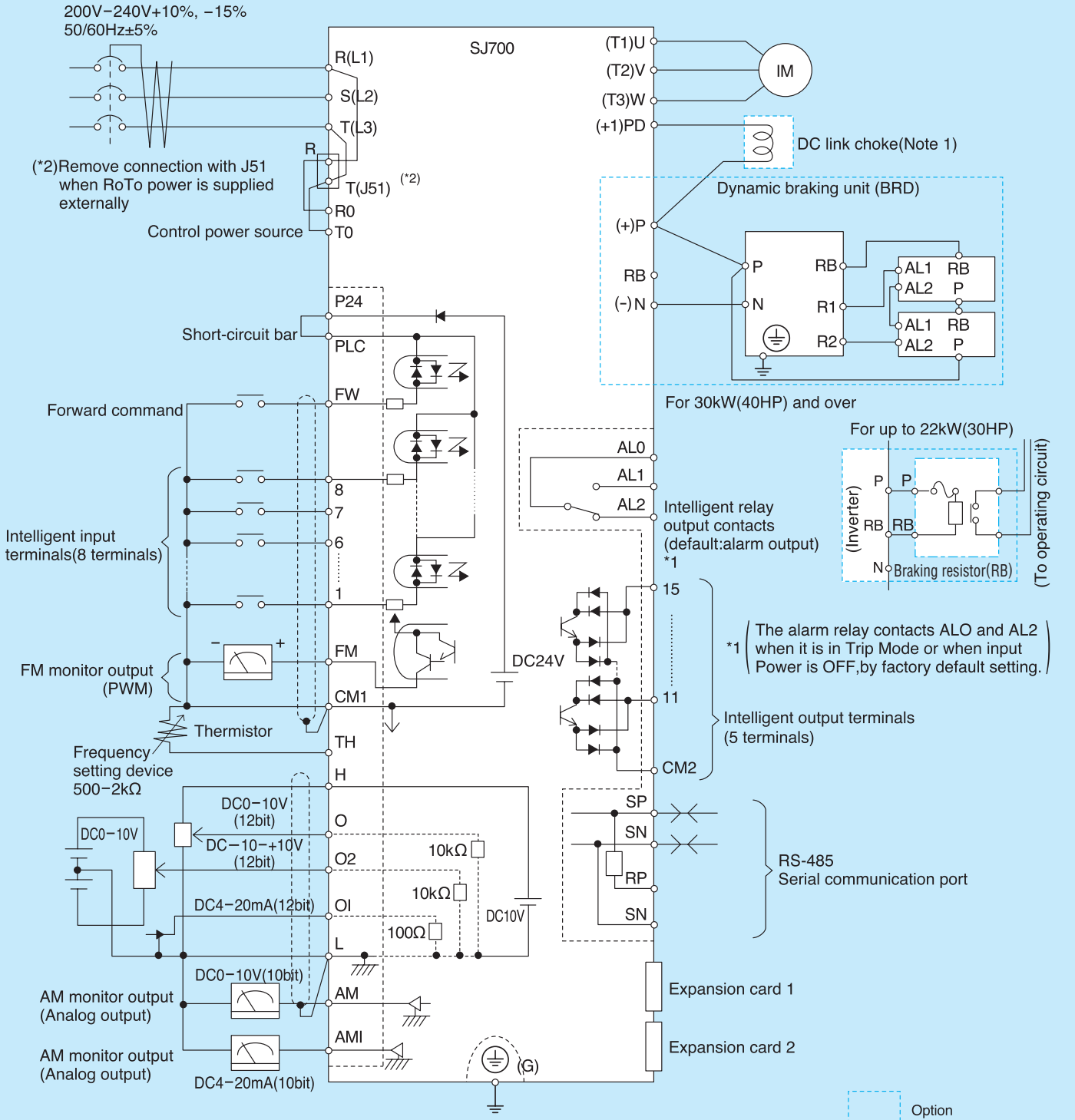
Terminal Name	FW, 1, 2, 3, 4, 5, 6, 7, 8	FM, TH	H, O, O2, OI, AM, AMI
Common terminal	P24	CM1	L

Note1:Please be sure to connect DC reactor attached to 1850HF, 3150HF and 4000HF.

CONNECTING DIAGRAM

●Sink type logic

In case of 400V class, place a transformer for operating circuit to receive 200V.



Terminal Name	FW, 1, 2, 3, 4, 5, 6, 7, 8, FM, TH	H, O, O2, OI, AM, AMI
Common terminal	CM1	L

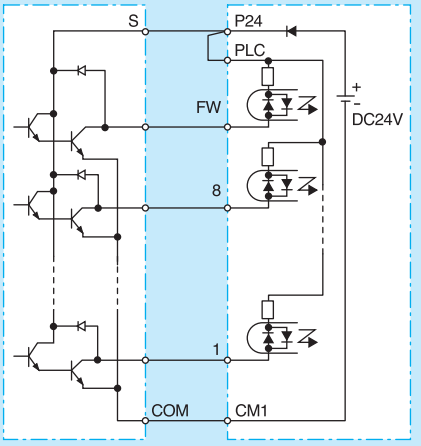
Note1:Please be sure to connect DC reactor attached to 1850HF, 3150HF and 4000HF.

CONNECTING TO PLC

●CONNECTION WITH INPUT TERMINALS

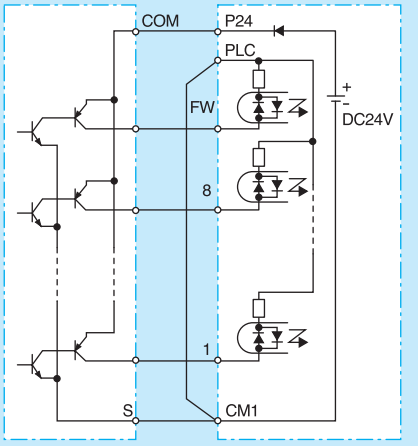
1. USING INTERNAL POWER SUPPLY OF THE INVERTER

(1) Sink type logic



Hitachi EH-150 series PLC Output Module EH-YT16 — SJ700

(2) Source type logic

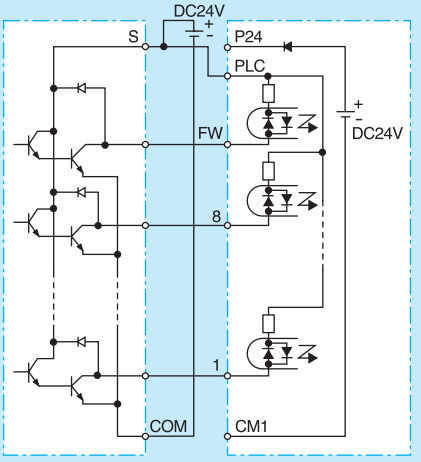


Hitachi EH-150 series PLC Output Module EH-YTP16 — SJ700

(Note: Place short-circuit bar between PLC and CM1 instead of P24 and PLC)

2.USING EXTERNAL POWER SUPPLY

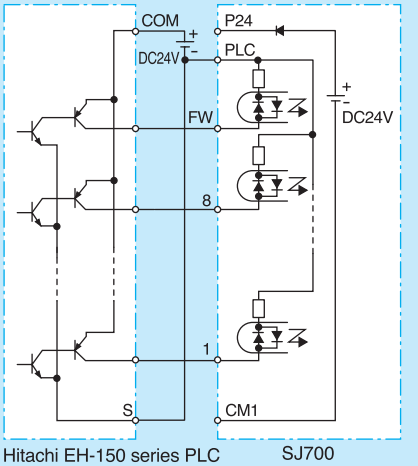
(1) Sink type logic



Hitachi EH-150 series PLC Output Module EH-YT16 — SJ700

(Note: Remove short-circuit bar between P24 and PLC)

(2) Source type logic



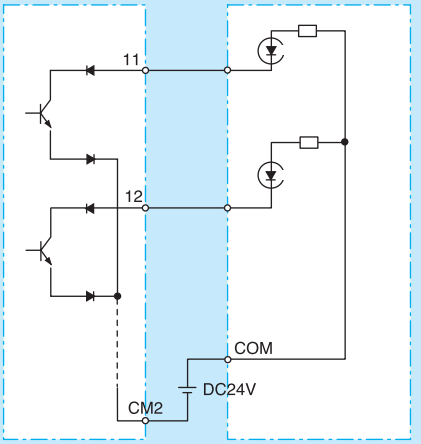
Hitachi EH-150 series PLC Output Module EH-YTP16 — SJ700

(Note: Remove short-circuit bar between P24 and PLC)

(Note: Be sure to turn on the inverter after turning on the PLC and its external power source to prevent the parameters in the inverter from being modified.)

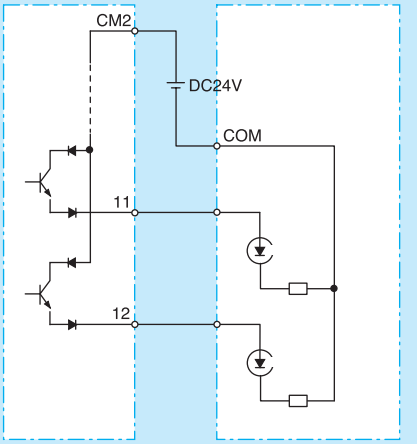
●CONNECTION WITH OUTPUT TERMINALS

(1) Sink type logic



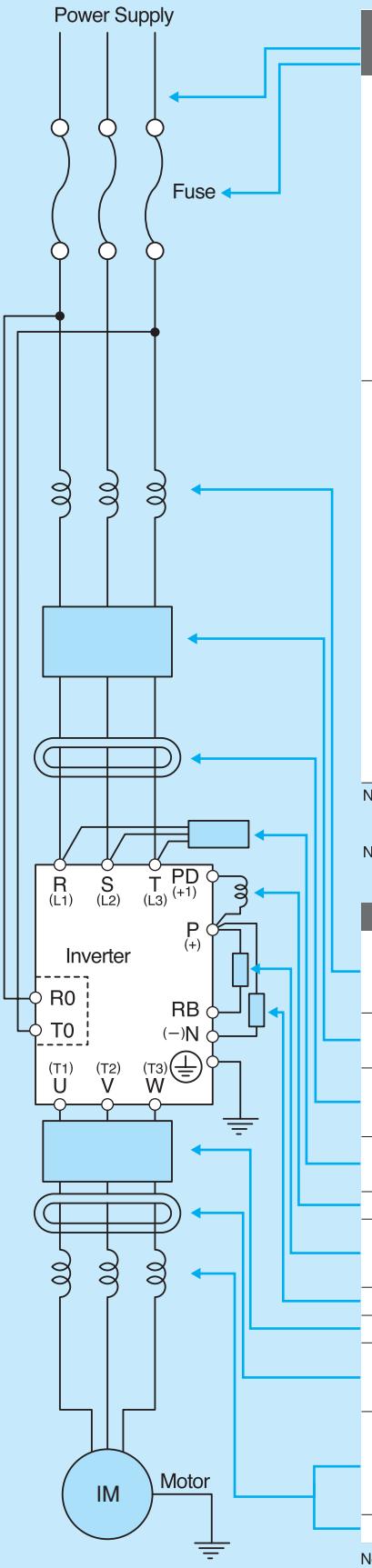
SJ700 — Hitachi EH-150 series PLC Input Module EH-XD16

(2) Source type logic



SJ700 — Hitachi EH-150 series PLC Input Module EH-XD16

WIRING and ACCESSORIES



Input Voltage	Motor Output (kW(HP))	Model	Wiring			Fuse (Class J)
			Power Lines		Signal Lines	
			AWG	mm²		
200V	5.5(7.5)	SJ700-055LFU2,LFF2	8	8.4	0.75mm² shielded wire	30
	7.5(10)	SJ700-075LFU2,LFF2	6	13.3		40
	11(15)	SJ700-110LFU2,LFF2	4	21.2		60
	15(20)	SJ700-150LFU2,LFF2	2	33.6		80
	18.5(25)	SJ700-185LFU2,LFF2	1	42.4		100
	22(30)	SJ700-220LFU2,LFF2	1	42.4		125
	30(40)	SJ700-300LFU2,LFF2	2/0	53.5		150
	37(50)	SJ700-370LFU2,LFF2	4/0	107.2		175
	45(60)	SJ700-450LFU2,LFF2	4/0	107.2		225
	55(75)	SJ700-550LFU2,LFF2	2/0×2	53.5×2		250
400V	5.5(7.5)	SJ700-055HFEF2,HFU2,HFF2	12	3.3	0.75mm² shielded wire	15
	7.5(10)	SJ700-075HFEF2,HFU2,HFF2	10	5.3		20
	11(15)	SJ700-110HFEF2,HFU2,HFF2	8	8.4		30
	15(20)	SJ700-150HFEF2,HFU2,HFF2	6	13.3		40
	18.5(25)	SJ700-185HFEF2,HFU2,HFF2	6	13.3		50
	22(30)	SJ700-220HFEF2,HFU2,HFF2	4	21.2		60
	30(40)	SJ700-300HFEF2,HFU2,HFF2	3	26.7		70
	37(50)	SJ700-370HFEF2,HFU2,HFF2	1	42.4		90
	45(60)	SJ700-450HFEF2,HFU2,HFF2	1×1 (75℃)	42.4		125
	55(75)	SJ700-550HFEF2,HFU2,HFF2	2/0	53.5		125
	185(250)	SJ700-1850HFE2,HFU2,HF2	300×2	152×2		400
	315(400)	SJ700-3150HFE2,HFU2,HF2	500×2	253×2		700
	400(550)	SJ700-4000HFE2,HFU2,HF2	800×2	405×2		1000

Note 1: Field wiring connection must be made by a UL and c-UL listed closed-loop terminal connector sized for the wire gauge involved.
Connector must be fixed using the crimping tool specified by the connector manufacturer.
Note 2: Be sure to use large wire gauges for power wiring if the distance exceeds 20m (66ft).

Name	Function
Input side AC reactor	This is useful in suppressing harmonics induced on the power supply lines, or when the main power voltage imbalance exceeds 3% (and power source capacity is more than 500kVA), or to smooth out line fluctuations. It also improves the power factor.
EMI filter	Reduces the conducted noise on the power supply wiring generated by the inverter. Connect to the inverter input side.
Radio noise filter	Electrical noise interference may occur on nearby equipment such as a radio receiver. This magnetic choke filter helps reduce radiated noise (can also be used on output).
Radio noise filter (Capacitor filter)	This capacitor filter reduces radiated noise from the main power wires in the inverter input side.
DC link choke	Suppresses harmonics generated by the inverter.
Braking resistor	This is useful for increasing the inverter's control torque for high duty-cycle (on-off) applications, and improving the decelerating capability.
Braking unit	
Output side noise filter	Reduces radiated noise from wiring in the inverter output side.
Radio noise filter	Electrical noise interference may occur on nearby equipment such as a radio receiver. This magnetic choke filter helps reduce radiated noise (can also be used on input).
AC reactor	This reactor reduces the vibration in the motor caused by the inverter's switching waveforms, by smoothing the waveforms to approximate commercial power quality. It is also useful when wiring from the inverter to the motor is more than 10m in length, to reduce harmonics.
LCR filter	Sine wave shaping filter for the output side.

Note: An EMI filter is required for European EMC directive and C-Tick, but the others are not for this purpose.

DIFFERENCE and COMPATIBILITY of SJ700 series and SJ300 series

Items			SJ300 series	SJ700 series
Copying the parameter settings			you can copy the parameter settings from the SJ300 series into the SJ700 series. (that you cannot copy the parameter settings from the SJ700 series to the SJ300 series because the SJ700 series has many new functions and additional parameters.)	
Parameter display mode.			No display mode selection. (full display)	Basic display mode/Data comparison function addition. Note:basic display mode [factory setting]) To display all parameters,specify "00" for "b037".
Change function		Retry or trip parameter	Instantaneous power failure/under-voltage/ overvoltage/overcurrent:It sets up by b001.	Instantaneous power failure/under-voltage:It sets up by b001. overvoltage/overcurrent:It sets up by b008.
		A016:External frequency filter time const.	Default:8	Default:31 Note 1
		A105:[OI]-[L] input start frequency enable	Default:01(external start frequency)	Default:00(0Hz)
		C025:Terminal [15] function	Default:08(instantaneous power failure)	Default:40(cooling-fan speed drop)
		b012,b212,b312: Electronic thermal function	Setting upper limit:120%	Setting upper limit:100%
		d007: Scaled output frequency monitoring	you can not change the output frequency setting by using the △ and/or ▽ key.	you can not change the output frequency setting by using the △ and/or ▽ key.
		A038:Jog frequency setting	Setting range:0 to 999Hz	Setting range: 0.01 to 999Hz(0Hz setup is impossible)
Terminal	Control Circuit	Removable	Removable	Removable (You can mount the SJ300 series into the SJ700 series.)
		Position	055 to 220L/H,370 to 550L/H:same position. 300L/H:97mm upper part from SJ300.	
	Main Circuit	Screw diameter	370H:M6	370H:M8
		Position	055 to 110L/H:10mm upper part from SJ300. 150 to 300L/H:20mm upper part from SJ300.550L:30mm upper part from SJ300. 370,450L/H,550H:same position.	
		Arrangement	055 to 110L/H:Two steps,150 to 550L/H:One step	055 to 550L/H:One step
		Others	150 to 220L/H:RB t here is not a terminal.	150 to 220L/H:RB t here is a terminal.
Easy-removable Dc bus Capacitor			All the models are possible.	15kW or more is possible.
Dynamic Brake circuit			up to 11kW	up to 22kW
Minimum value of resistor(Ω)		055L	17	16
		075L	17	10
		110L	17	10
		055H	50	35
		075H	50	35
Dimensions		Installation	055L/H:Those with no compatibility.075 to 550L/H:Those with compatibility.	
		External radiating fin	055L/H:Those with no compatibility.075 to 550L/H:Those with compatibility. Note 2	
Digital operator position			055L/H:5mm upper part from SJ300. 300L/H:97mm upper part from SJ300. 075 to 220L/H,370 to 550L/H:same position.	
Option boards		SJ-DG	Those with compatibility.	
		SJ-FB		
		SJ-DN	Those with compatibility. Note:Since the SJ700 series has many new functions and additional parameters, some functions of the SJ-DN, SJ-LW, and SJ-PBT (option boards conforming to the open network specifications) cannot be implemented on the SJ700 series.	
		SJ-LW		
		SJ-PBT		
		Option boards	150 to 220L/H,370L/H:same position.300L/H:97mm upper part from SJ300.	

Note1:Since a response falls the V/F characteristic curve selection SLV should make this setup small.
Note2:370,450L/H and 550H:Metal fittings differ.

FOR CORRECT OPERATION

● Application to Motors

[Application to general-purpose motors]

Operating frequency	The overspeed endurance of a general-purpose motor is 120% of the rated speed for 2 minutes (JIS C4,004). For operation at higher than 60Hz, it is required to examine the allowable torque of the motor, useful life of bearings, noise, vibration, etc. In this case, be sure to consult the motor manufacturer as the maximum allowable rpm differs depending on the motor capacity, etc.
Torque characteristics	The torque characteristics of driving a general-purpose motor with an inverter differ from those of driving it using commercial power (starting torque decreases in particular). Carefully check the load torque characteristic of a connected machine and the driving torque characteristic of the motor.
Motor loss and temperature increase	An inverter-driven general-purpose motor heats up quickly at lower speeds. Consequently, the continuous torque level (output) will decrease at lower motor speeds. Carefully check the torque characteristics vs speed range requirements.
Noise	When run by an inverter, a general-purpose motor generates noise slightly greater than with commercial power.
Vibration	When run by an inverter at variable speeds, the motor may generate vibration, especially because of (a) unbalance of the rotor including a connected machine, or (b) resonance caused by the natural vibration frequency of a mechanical system. Particularly, be careful of (b) when operating at variable speeds a machine previously fitted with a constant speed motor. Vibration can be minimized by (1) avoiding resonance points using the frequency jump function of the inverter, (2) using a tire-shaped coupling, or (3) placing a rubber shock absorber beneath the motor base.
Power transmission mechanism	Under continued, low-speed operation, oil lubrication can deteriorate in a power transmission mechanism with an oil-type gear box (gear motor) or reducer. Check with the motor manufacturer for the permissible range of continuous speed. To operate at more than 60 Hz, confirm the machine' s ability to withstand the centrifugal force generated.

[Application to special motors]

Gear motor	The allowable rotation range of continuous drive varies depending on the lubrication method or motor manufacturer. (Particularly in case of oil lubrication, pay attention to the low frequency range.)
Brake-equipped motor	For use of a brake-equipped motor, be sure to connect the braking power supply from the primary side of the inverter.
Pole-change motor	There are different kinds of pole-change motors (constant output characteristic type, constant torque characteristic type, etc.), with different rated current values. In motor selection, check the maximum allowable current for each motor of a different pole count. At the time of pole changing, be sure to stop the motor. Also see: Application to the 400V-class motor.
Submersible motor	The rated current of a submersible motor is significantly larger than that of the general-purpose motor. In inverter selection, be sure to check the rated current of the motor.
Explosion-proof motor	Inverter drive is not suitable for a safety-enhanced explosion-proof type motor. The inverter should be used in combination with a pressure-proof explosion-proof type of motor. *Explosion-proof verification is not available for SJ700 Series.
Synchronous (MS) motor High-speed (HFM) motor	In most cases, the synchronous (MS) motor and the high-speed (HFM) motor are designed and manufactured to meet the specifications suitable for a connected machine. As to proper inverter selection, consult the manufacturer.
Single-phase motor	A single-phase motor is not suitable for variable-speed operation by an inverter drive. Therefore, use a three-phase motor.

[Application to the 400V-class motor]

A system applying a voltage-type PWM inverter with IGBT may have surge voltage at the motor terminals resulting from the cable constants including the cable length and the cable laying method. Depending on the surge current magnification, the motor coil insulation may be degraded. In particular, when a 400V-class motor is used, a longer cable is used, and critical loss can occur, take the following countermeasures:
(1) install the LCR filter between the inverter and the motor,
(2) install the AC reactor between the inverter and the motor, or
(3) enhance the insulation of the motor coil.

● Notes on Use

[Drive]

Run/Stop	Run or stop of the inverter must be done with the keys on the operator panel or through the control circuit terminal. Do not operate by installing a electromagnetic contactor (Mg) in the main circuit.
Emergency motor stop	When the protective function is operating or the power supply stops, the motor enters the free run stop state. When an emergency stop is required or when the motor should be kept stopped, use of a mechanical brake should be considered.
High-frequency run	A max. 400Hz can be selected on the SJ700 Series. However, a two-pole motor can attain up to approx. 24,000 rpm, which is extremely dangerous. Therefore, carefully make selection and settings by checking the mechanical strength of the motor and connected machines. Consult the motor manufacturer when it is necessary to drive a standard (general-purpose) motor above 60 Hz. A full line of high-speed motors is available from Hitachi.

[Installation location and operating environment]

Avoid installation in areas of high temperature, excessive humidity, or where moisture can easily collect, as well as areas that are dusty, subject to corrosive gasses, mist of liquid for grinding, or salt. Install the inverter away from direct sunlight in a well-ventilated room that is free of vibration. The inverter can be operated in the ambient temperature range from -10 to 50˚C.(Carrier frequency and output current must be reduced in the range of 40 to 50˚C.)

[Main power supply]

Installation of an AC reactor on the input side	In the following examples involving a general-purpose inverter, a large peak current flows on the main power supply side, and is able to destroy the converter module. Where such situations are foreseen or the connected equipment must be highly reliable, install an AC reactor between the power supply and the inverter. Also, where influence of indirect lightning strike is possible, install a lightning conductor. (A) The unbalance factor of the power supply is 3% or higher. (Note) (B) The power supply capacity is at least 10 times greater than the inverter capacity (the power supply capacity is 500 kVA or more). (C) Abrupt power supply changes are expected. Examples: (1) Several inverters are interconnected with a short bus. (2) A thyristor converter and an inverter are interconnected with a short bus. (3) An installed phase advance capacitor opens and closes. In cases (A), (B) and (C), it is recommended to install an AC reactor on the main power supply side. Note: Example calculation with V_{RS} = 205V, V_{ST} = 201V, V_{TR} = 200V V_{RS} : R-S line voltage, V_{ST} : S-T line voltage, V_{TR} : T-R line voltage Unbalance factor of voltage = $\frac{\text{Max. line voltage (min.) - Mean line voltage}}{\text{Mean line voltage}} \times 100$ $= \frac{V_{RS} - (V_{RS} + V_{ST} + V_{TR})/3}{(V_{RS} + V_{ST} + V_{TR})/3} \times 100 = \frac{205 - 202}{202} \times 100 = 1.5\ (\%)$
Using a private power generator	An inverter run by a private power generator may overheat the generator or suffer from a deformed output voltage waveform of the generator. Generally, the generator capacity should be five times that of the inverter (kVA) in a PWM control system, or six times greater in a PAM control system.

● Notes on Peripheral Equipment Selection

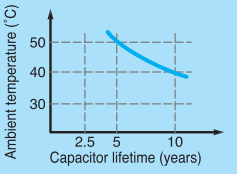
Wiring connections		(1) Be sure to connect main power wires with R(L1), S(L2), and T(L3) terminals (input) and motor wires to U(T1), V(T2), and W(T3) terminals (output). (Incorrect connection will cause an immediate failure.) (2) Be sure to provide a grounding connection with the ground terminal (⏚).
Wiring between inverter and motor	Electromagnetic contactor	When an electromagnetic contactor is installed between the inverter and the motor, do not perform on-off switching during running operation.
	Thermal relay	When used with standard applicable output motors (standard three-phase squirrel-cage four-pole motors), the SJ700 Series does not need a thermal relay for motor protection due to the internal electronic protective circuit. A thermal relay, however, should be used: ● during continuous running outside a range of 30 to 60 Hz. ● for motors exceeding the range of electronic thermal adjustment (rated current). ● when several motors are driven by the same inverter; install a thermal relay for each motor. ● The RC value of the thermal relay should be more than 1.1 times the rated current of the motor. Where the wiring length is 10 m or more, the thermal relay tends to turn off readily. In this case, provide an AC reactor on the output side or use a current sensor.
Installing a circuit breaker		Install a circuit breaker on the main power input side to protect inverter wiring and ensure personal safety. Choose an inverter-compatible circuit breaker. The conventional type may malfunction due to harmonics from the inverter. For more information, consult the circuit breaker manufacturer.
Wiring distance		The wiring distance between the inverter and the remote operator panel should be 20 meters or less. When this distance is exceeded, use CVD-E (current-voltage converter) or RCD-E (remote control device). Shielded cable should be used on the wiring. Beware of voltage drops on main circuit wires. (A large voltage drop reduces torque.)
Earth leakage relay		If the earth leakage relay (or earth leakage breaker) is used, it should have a sensitivity level of 15 mA or more (per inverter).
Phase advance capacitor		Do not use a capacitor for power factor improvement between the inverter and the motor because the high-frequency components of the inverter output may overheat or damage the capacitor.

● High-frequency Noise and Leakage Current

(1) High-frequency components are included in the input/output of the inverter main circuit, and they may cause interference in a transmitter, radio, or sensor if used near the inverter. The interference can be minimized by attaching noise filters (option) in the inverter circuitry.
(2) The switching action of an inverter causes an increase in leakage current. Be sure to ground the inverter and the motor.

● Lifetime of Primary Parts

Because a DC bus capacitor deteriorates as it undergoes internal chemical reaction, it should normally be replaced every 10 years. (10 years is not the guaranteed lifespan but rather, the expected design lifespan.) Be aware, however, that its life expectancy is considerably shorter when the inverter is subjected to such adverse factors as high temperatures or heavy loads exceeding the rated current of the inverter.
JEMA standard is the 5 years at ambient temperature 40˚C used in 12 hours daily. (according to the " Instructions for Periodic Inspection of General-Purpose Inverter " (JEMA).)
Also, such moving parts as a cooling fan should be replaced. Maintenance inspection and parts replacement must be performed by only specified trained personnel.



Precaution for Correct Usage

- Before use, be sure to read through the Instruction Manual to insure proper use of the inverter.
- Note that the inverter requires electrical wiring; a trained specialist should carry out the wiring.
- The inverter in this catalog is designed for general industrial applications. For special applications in fields such as aircraft, outer space, nuclear power, electrical power, transport vehicles, clinics, and underwater equipment, please consult with us in advance.
- For application in a facility where human life is involved or serious losses may occur, make sure to provide safety devices to avoid a serious accident.
- The inverter is intended for use with a three-phase AC motor. For use with a load other than this, please consult with us.

Information in this brochure is subject to change without notice.

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